

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

IN THE MATTER OF:)
)
THE BERRY'S CREEK STUDY AREA)
)
)
)
) U.S. EPA Index No.
) II-CERCLA-2008-2011
RESPONDENTS listed on Appendix A.)
)
)
Proceeding Under Sections 104, 107,)
122(a) and 122(d)(3) of the Comprehensive)
Environmental Response, Compensation,)
and Liability Act as amended)
(42 U.S.C. §§ 9604, 9607, 9622(a),)
9622(d)(3)).)
)
)

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
BERRY'S CREEK STUDY AREA

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	JURISDICTION	1
III.	PARTIES BOUND	2
IV.	DEFINITIONS	3
V.	STATEMENT OF PURPOSE	6
VI.	EPA's FINDINGS OF FACT AND CONCLUSIONS OF LAW	7
VII.	NOTICE	9
VIII.	SETTLEMENT AGREEMENT	9
IX.	DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS ...	9
X.	WORK TO BE PERFORMED	11
XI.	EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS	16
XII.	QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION	19
XIII.	SITE ACCESS AND INSTITUTIONAL CONTROLS	22
XIV.	COMPLIANCE WITH OTHER LAWS	23
XV.	RETENTION OF RECORDS	23
XVI.	DISPUTE RESOLUTION	25
XVII.	STIPULATED PENALTIES	26
XVIII.	FORCE MAJEURE	30
XIX.	PAYMENT OF RESPONSE COSTS	31
XX.	COVENANT NOT TO SUE BY EPA	34
XXI.	RESERVATION OF RIGHTS BY EPA	34
XXII.	COVENANT NOT TO SUE BY RESPONDENTS	36

XXIII.	OTHER CLAIMS	38
XXIV.	CONTRIBUTION	39
XXV.	INDEMNIFICATION	39
XXVI.	INSURANCE	40
XXVII.	PERFORMANCE GUARANTEE	41
XXVIII.	INTEGRATION/APPENDICES	46
XXIX.	ADMINISTRATIVE RECORD	47
XXX.	EFFECTIVE DATE AND SUBSEQUENT MODIFICATION	47
XXXI.	NOTICE OF COMPLETION OF WORK	48

Attachments

Appendix A - List of Respondents

Appendix B - Statement of Work

Appendix C - Map of Site

Appendix D - Trust Agreement

I. INTRODUCTION

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and the Respondents listed in Appendix A ("Respondents"). The Settlement Agreement concerns the preparation of, performance of, and reimbursement for costs incurred by EPA in connection with a Remedial Investigation and Feasibility Study ("RI/FS") at the Berry's Creek Study Area ("Site") located in the Boroughs of Carlstadt, East Rutherford, Moonachie, Rutherford, Teterboro and Woodridge, Bergen County, New Jersey.

II. JURISDICTION

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), as amended, 42 U.S.C. §§ 9604, 9607, and 9622. This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (1987), and further delegated to the Regional Administrators on September 13, 1987, by EPA Delegation Nos. 14-14-C and 14-14-D. This authority was redelegated by the Regional Administrator of EPA Region II to the Director of the Emergency and Remedial Response Division by EPA Regional Delegations 14-14-C and 14-14-D dated November 23, 2004.

3. In accordance with Sections 104(b)(2) and 122(j)(1) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and 9622(j)(1), EPA notified the U.S. Department of Commerce and the U.S. Fish and Wildlife Service of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal trusteeship.

4. EPA and Respondents recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondents in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondents do not admit, and retain the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact, conclusions of law and determinations in

Section VI of this Settlement Agreement. Respondents agree to comply with and be bound by the terms of this Settlement Agreement and further agree that they will not contest the basis or validity of this Settlement Agreement or its terms in any action to enforce its provisions.

5. Consistent with EPA guidance and standard practice, EPA intends to identify and take measures to obtain the participation of additional parties as the RI/FS proceeds. Such measures may include taking enforcement actions pursuant to Sections 106(a) and 107(a) of CERCLA, 42 U.S.C. § 9606(a) and § 9607(a). This does not alter the Respondents' obligations to perform the Work under this Settlement Agreement. EPA and Respondents agree to cooperate in the identification of additional parties and in obtaining their participation in this Settlement Agreement. EPA and Respondents acknowledge that this Settlement Agreement may be amended, upon mutually acceptable terms and conditions, to include additional parties who elect to become Respondents after this Settlement Agreement becomes effective.

III. PARTIES BOUND

6. This Settlement Agreement applies to and is binding upon EPA and upon Respondents and their successors and assigns. Any change in ownership or corporate status of a Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Settlement Agreement.

7. Respondents are jointly and severally liable for carrying out all activities required by this Settlement Agreement. In the event of the insolvency or other failure of any one or more Respondents to implement the requirements of this Settlement Agreement, the remaining Respondents shall complete all such requirements.

8. Respondents shall ensure that their contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondents shall be responsible for any noncompliance with this Settlement Agreement.

9. Each undersigned representative of Respondents certifies that he or she is fully authorized to enter into the

terms and conditions of this Settlement Agreement and to execute and legally bind the Respondent he or she represents to this document.

IV. DEFINITIONS

10. Unless otherwise expressly provided herein, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

A. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601, et seq.

B. "Contractor" shall mean the company, companies or individuals retained by Respondents to perform any of the Work required by this Settlement Agreement.

C. "Day" shall mean a calendar day unless otherwise expressly stated. "Working Day" shall mean a day consisting of hours 8 a.m. to 6 p.m., other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business on the next Working Day.

D. "Designated Project Coordinator" shall mean the person designated by Respondents who shall be charged with the duty of being knowledgeable of the performance of all work being performed by Respondents pursuant to this Settlement Agreement.

E. "EPA" or "Agency" shall mean the United States Environmental Protection Agency and any successor department or agency of the United States.

F. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports, and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing or enforcing this Settlement Agreement, including but not limited

to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Paragraph 54 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), and Paragraph 40 (emergency response), and Paragraph 84 (Work Takeover).

G. "Hazardous substances" shall mean any substance (or mixture containing any hazardous substance) that falls within the definition of a "hazardous substance," as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

H. "Institutional controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

I. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

J. "NJDEP" shall mean the New Jersey Department of Environmental Protection.

K. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

L. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral.

M. "Parties" shall mean the United States Environmental Protection Agency and Respondents.

N. "Respondents" shall mean signatories to this Settlement Agreement other than EPA as listed in Appendix A, as amended from time to time.

O. "Scoping Activity" or "Scoping Activities" shall mean the activities described in the Scoping Activities Work Plan attached to the Administrative Settlement Agreement and Order on Consent for the Berry's Creek Study Area that was signed by EPA on July 2, 2007 (U.S. EPA Index No. II-CERCLA-2007-2006).

P. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

Q. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent (including any amendments hereto pursuant to Section XXX), all appendices attached hereto (listed in Section XXVIII) and all documents incorporated by reference into this document including without limitation EPA-approved submissions. EPA-approved submissions (other than progress reports) are incorporated into and become a part of the Settlement Agreement upon approval by EPA. In the event of conflict between this Settlement Agreement and any appendix or other incorporated documents, this Settlement Agreement shall control.

R. "Site" shall mean the Berry's Creek Study Area, which is comprised of the water body known as Berry's Creek, including the Berry's Creek Canal and the natural course of Berry's Creek; all tributaries to Berry's Creek from its headwaters to the Hackensack River; and wetlands that are hydrologically connected to Berry's Creek or its tributaries, all located in the Boroughs of Rutherford, East Rutherford, Carlstadt, Wood Ridge, Moonachie, and Teterboro in Bergen County, New Jersey, as depicted generally on the map attached as Appendix C, and any areas where contamination from the Study Area has come to be located.

S. "Statement of Work" or "SOW" shall mean the Statement of Work for performance of a RI/FS for the Site, as set forth in Appendix B to this Settlement Agreement. The Statement of Work is incorporated into this Settlement Agreement and is an enforceable part of this Settlement Agreement as are any modifications made thereto in accordance with this Settlement Agreement.

T. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); provided, however, that "Waste Material" does not include any environmental samples taken in the course of the Work.

U. "Work" shall mean all activities Respondents are required to perform under this Settlement Agreement, except those required by Section XV (Retention of Records).

V. STATEMENT OF PURPOSE

11. In entering into this Settlement Agreement, the objectives of EPA and Respondents are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site, by conducting a Remedial Investigation ("RI") as more specifically set forth in the Statement of Work attached as Appendix B to this Settlement Agreement; (b) to identify and evaluate remedial alternatives to prevent, mitigate or otherwise respond to or remedy a release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site, by conducting a Feasibility Study ("FS") in conjunction with the RI as more specifically set forth in the SOW; (c) to recover Future Response Costs incurred by EPA with respect to this Settlement Agreement; and (d) to resolve potential liabilities of Respondents for the Work and Future Response Costs as provided in this Settlement Agreement.

12. The Work conducted under this Settlement Agreement is subject to approval by EPA, and Respondents shall provide all appropriate and necessary information to assess Site conditions and evaluate alternatives to the extent necessary to select a remedy that will be consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"), as provided more specifically in the SOW. Respondents shall conduct all Work under this Settlement Agreement in compliance with CERCLA, the NCP, and all applicable EPA guidances, policies, and procedures as provided herein and in the SOW.

VI. EPA'S FINDINGS OF FACT AND CONCLUSIONS OF LAW

13. The Berry's Creek Study Area (hereinafter referred to as the "Site") is located in Bergen County and traverses the Boroughs of Rutherford, East Rutherford, Carlstadt, Wood Ridge, Moonachie, and Teterboro. Berry's Creek is a tidal tributary of the Hackensack River. The Berry's Creek watershed encompasses approximately 12 square miles of wetlands inside the Hackensack River watershed.

14. For administrative purposes, EPA has designated the Site as Operable Unit 2 of the Ventron/Velsicol Superfund Site. In 1982 the Ventron/Velsicol Site was proposed for inclusion on the National Priorities List ("NPL"). On September 1, 1983 the Ventron/Velsicol Site was formally placed on the NPL, with NJDEP designated as the lead agency for directing the investigation and cleanup of the Ventron/Velsicol Site..

15. The Site contains other industrial, commercial and institutional facilities that manufactured, processed or used chemical products containing hazardous substances that may have been released, directly or indirectly, to Berry's Creek.

16. Surface water, groundwater, sediment, and/or soil contaminants found at the Site include, but are not limited to, arsenic, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, cadmium, chlorobenzene, chloroform, chromium, copper, cyanide, dichlorobenzene, di-n-butyl phthalate, 1,2-dichlorobenzene, 1,2-dichloroethane, dieldrin, di-n-octyl phthalate, ethylbenzene, lead, mercury, methylene chloride, methyl ethyl ketone, naphthalene, nickel, petroleum hydrocarbons, phenanthrene, phenol, polychlorinated biphenyls, pyrene, selenium, silver, tetrachloroethylene, thallium, toluene, 1,2-trans dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, xylene, and zinc.

17. In 2001 EPA assumed lead agency responsibility for the Site.

18. Exposure to the various hazardous substances present at the Site by direct contact, inhalation, or ingestion may cause a variety of adverse human health effects.

19. The continuing release(s) of hazardous substances present at the Site may continue to impact the Berry's Creek and

Hackensack River watersheds, the environment, and surrounding residents and businesses.

20. The Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

21. Wastes and constituents thereof at the Site, sent to the Site, disposed of at the Site, and/or transported to the Site identified in Paragraphs 15 and 16 are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute "any pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare under Section 104(a)(1) of CERCLA.

22. The presence of hazardous substances at the Site or the past, present or potential migration of hazardous substances currently located at or emanating from the Site, constitute actual and/or threatened "releases" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

23. Respondents are "person[s]" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

24. Respondents are potentially responsible parties under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622. Each Respondent is a person who owns or operates a facility within the area defined as the Site; at the time of disposal of hazardous substances owned or operated a facility located within the area defined as the Site at which such disposal occurred and from which there was a release or threatened release of a hazardous substance; arranged for disposal or treatment or transport for disposal or treatment of hazardous substances at the Site; or accepted hazardous substances for transport to a disposal or treatment facility selected by such person at the Site. Each Respondent therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

25. The actions required by this Settlement Agreement are necessary to protect the public health, welfare or the environment, are in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

26. EPA has determined that Respondents are qualified to conduct the RI/FS within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Respondents comply with the terms of this Settlement Agreement.

VII. NOTICE

27. EPA has notified the State of New Jersey ("State") that this Settlement Agreement is being issued and that EPA is the lead agency for coordinating, overseeing, and enforcing the response action at the Site required by the Settlement Agreement.

VIII. SETTLEMENT AGREEMENT

28. Based upon the foregoing Findings of Fact and Conclusions of Law, it is hereby Ordered and Agreed that Respondents shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

IX. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

29. Selection of Contractors, Personnel. All Work performed by Respondents under this Settlement Agreement shall be under the direction and supervision of qualified personnel. EPA agrees that Environmental Liability Management, Inc. ("ELM") is qualified to undertake or supervise the activities under the Statement of Work. At least 30 days before another contractor, subcontractor, or laboratory is anticipated to begin a particular activity described in the Statement of Work, Respondents shall notify EPA in writing of the names, titles, and qualifications of the key personnel at the contractor, subcontractor, or laboratory to be used. With respect to any proposed contractor that will be collecting or analyzing environmental samples, Respondents shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995, or most recent version), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP

should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001 or subsequently issued guidance) or equivalent documentation as determined by EPA. The qualifications of the key personnel undertaking the Work for Respondents shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. If EPA disapproves in writing of any key personnel's technical qualifications, Respondents shall notify EPA of the identity and qualifications of the replacements within 30 days of the written notice. If EPA subsequently disapproves of the replacement's technical qualifications, EPA reserves the right to terminate this Settlement Agreement and to conduct a complete RI/FS, and to seek reimbursement for costs and penalties from Respondents. During the course of the RI/FS, Respondents shall notify EPA in writing of any changes or additions in the key personnel used to carry out such Work, providing their names, titles, and qualifications. EPA shall have the same right to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

30. Respondents have designated Peter Brussock of ELM as their Designated Project Coordinator, who shall be responsible for administration of all response actions by Respondents required by this Settlement Agreement. As reasonably necessary or appropriate, the Designated Project Coordinator or his/her designee shall be present on Site or readily available when Work is occurring at the Site. Respondents shall have the right to change their designated Project Coordinator, subject to EPA's right to disapprove in writing. Respondents shall notify EPA 14 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notification. Receipt by Respondents' Designated Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Respondents.

31. EPA has designated Douglas Tomchuk of the New Jersey Remediation Branch, Region II, as its Project Coordinator. EPA will promptly notify Respondents of a change of its designated Project Coordinator. Except as otherwise provided in this Settlement Agreement, Respondents shall send all submissions required by this Settlement Agreement by electronic mail, certified mail, return receipt requested, or by UPS or Federal Express, to the EPA Project Coordinator at:

Douglas Tomchuk
U.S. Environmental Protection Agency,
Region II
290 Broadway, 19th Floor
New York, New York 10007-1866
E-mail: Tomchuk.Doug@epa.gov

Respondents shall submit in electronic form all portions of any report or other deliverable Respondents are required to submit pursuant to provisions of this Settlement Agreement. Respondents shall submit 4 hard copies to EPA and 3 hard copies to the State of each deliverable listed in the SOW.

32. EPA's Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, EPA's Project Coordinator shall have the authority, to be exercised consistent with the NCP, to halt any Work required by this Settlement Agreement and to take any necessary response action when s/he determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the EPA Project Coordinator from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work.

33. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. § 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of EPA, but not to modify the RI/FS Work Plan.

X. WORK TO BE PERFORMED

34. Respondents shall conduct the RI/FS for the Site in accordance with the provisions of this Settlement Agreement, the SOW, CERCLA, the NCP, and EPA guidance, including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01, October 1988 or subsequently issued guidance), "Guidance for Data Usability in Risk Assessment" (OSWER Directive #9285.7-05, October 1990 or subsequently issued guidance), and guidance referenced therein, and guidance referenced in the SOW, as such guidance may be amended or

modified by EPA. The RI shall consist of analyzing and incorporating data from the Scoping Activities; collecting additional data to characterize Site conditions; determining the nature and extent of the contamination at or from the Site, including the extent to which multiple past and present sources of contaminants (outfalls, non-point sources, sediments) may have affected the Berry's Creek watershed; assessing risk to human health and the environment; and conducting treatability testing as necessary to evaluate the potential performance and cost of any treatment technologies that are being considered. The FS shall determine and evaluate (based on treatability testing, where appropriate) alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site. The alternatives evaluated must include, but shall not be limited to, the range of alternatives described in the NCP and relevant guidance, and shall include remedial actions that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In evaluating the alternatives, Respondents shall address the factors required to be taken into account by Section 121 of CERCLA, 42 U.S.C. § 9621, and § 300.430(e) of the NCP, 40 C.F.R. § 300.430(e). The RI/FS Work Plan to be submitted by Respondents in accordance with the SOW shall contain a detailed project schedule for completion of the RI/FS.

35. Upon receipt of the draft FS Report, EPA may evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed and will evaluate the durability, reliability and effectiveness of any proposed Institutional Controls.

36. Modification of the RI/FS Work Plan.

a. As information is developed during the Work, Respondents may propose modifications as appropriate to the SOW, RI/FS Work Plan, or other plans for EPA's consideration. If Respondents do so, they shall submit such proposed modifications to EPA for review and approval in accordance with Section XI (EPA Approval of Plans and Other Submissions). In addition, if at any time during the RI/FS process, Respondents identify a need for additional data, Respondents shall submit a memorandum documenting the need for additional data to the EPA Project

Coordinator within 30 days of identification. EPA in its discretion will determine whether the additional data will be collected by Respondents and whether it will be incorporated into reports and deliverables. The EPA Project Coordinator may authorize minor field modifications to any plans, studies, designs, techniques, or procedures undertaken or utilized in performing the Work under this Settlement Agreement, as long as any such modifications are approved in writing (which may include e-mail) and are within the scope of and consistent with the SOW.

b. In the event of unanticipated or changed circumstances at the Site that may warrant changes in the RI/FS Work Plan, Respondents shall notify the EPA Project Coordinator by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In addition to the authorities in the NCP, in the event that EPA determines that the unanticipated or changed circumstances warrant changes in the RI/FS Work Plan, EPA shall request in writing that Respondents modify, amend or supplement the RI/FS Work Plan in writing accordingly. Respondents shall implement the RI/FS Work Plan as modified, amended, or supplemented.

c. EPA may determine that, in addition to tasks defined in the initially approved RI/FS Work Plan, other additional Work may be necessary to accomplish the objectives of the RI/FS. Subject to the Dispute Resolution provisions in Section XVI of this Settlement Agreement, Respondents agree to perform those response actions in addition to those required by the initially approved RI/FS Work Plan, including any approved modifications, if EPA determines, in writing, that such actions are necessary for a complete RI/FS.

d. Respondents shall confirm their willingness to perform the additional Work in writing to EPA within 10 days of receipt of the EPA request. If Respondents object to any modification determined by EPA to be necessary pursuant to this Paragraph, Respondents may seek dispute resolution pursuant to Section XVI (Dispute Resolution). The SOW and/or RI/FS Work Plan shall be modified in accordance with the final resolution of the dispute.

e. Respondents shall complete the additional Work according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the RI/FS

Work Plan or written RI/FS Work Plan supplement. EPA reserves the right to conduct the additional Work itself at any point pursuant to Paragraph 84 (Work Takeover), to seek reimbursement from Respondents, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions at the Site through mechanisms other than this Settlement Agreement. Respondents reserve the right to object to any such requirement.

37. Off-Site Shipment of Waste Material. a. Except as provided herein, Respondents shall, prior to any off-site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to EPA's Designated Project Coordinator. The requirements of this paragraph shall not apply to any such off-site shipments when the total volume of such shipments will not exceed 10 cubic yards.

(1) Respondents shall include in the written notification the following information: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. Respondents shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

(2) The identity of the receiving facility and state will be determined by Respondents following the award of the contract for the remedial investigation and feasibility study. Respondents shall provide the information required by Subparagraphs 37.a.(1) as soon as practicable after the need for out-of-state shipment of more than 10 cubic yards of Waste Material has been identified and before the Waste Material is actually shipped.

b. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site

location, Respondents shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondents shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

38. Meetings. EPA and Respondents agree to implement a collaborative and cooperative approach to management of the RI/FS process, including the use of technical work groups as appropriate. Respondents shall (in person, or by telephone conference if approved by EPA's Project Coordinator) make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion, but are anticipated to occur at least monthly during early phases of the RI/FS.

39. Progress Reports. In addition to the deliverables set forth in this Settlement Agreement, Respondents shall provide to EPA monthly progress reports by the 15th day of the following month. At a minimum, with respect to the preceding month, these progress reports shall: (1) describe the actions which have been taken to comply with this Settlement Agreement during that month, (2) include all results of sampling and tests and all other data received by Respondents, in the manner provided in the SOW, unless the data has otherwise been made available to EPA, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for RI/FS completion, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

40. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence resulting from the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all

appropriate action. Respondents shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents shall also immediately notify the EPA Project Coordinator or, in the event of his/her unavailability, the Chief of the Central New Jersey Remediation Section of the Emergency and Remedial Response Division of EPA Region II) by telephone (212-637-4380) of the incident or Site conditions. In the event that Respondents fail to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondents shall reimburse EPA for all costs of the response action not inconsistent with the NCP pursuant to Section XIX (Payment of Response Costs).

b. In addition, in the event of any release of a hazardous substance from the Site caused by the Work, Respondents shall immediately notify the EPA Project Coordinator, the Chief of the Central New Jersey Remediation Section of the Emergency and Remedial Response Division of EPA Region II) by telephone (212-637-4380) and the National Response Center at (800) 424-8802. Respondents shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, any reporting required under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XI. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

41. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, EPA shall, in writing (which may be in electronic form such as e-mail): (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondents modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Respondents at least one notice of deficiency and an opportunity to cure within 30 days, except

where to do so would cause serious disruption to the Work or where previous submissions have been disapproved due to material defects.

42. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Subparagraph 41(a), (b), (c) or (e), Respondents shall proceed to take any action required by the plan, report or other item, as approved or modified by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XVI (Dispute Resolution) with respect to the modifications or conditions made by EPA. Following EPA approval or modification of a submittal or portion thereof, Respondents shall not thereafter alter or amend such submittal or portion thereof unless directed by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Subparagraph 41(c) and the submission had a material defect, EPA retains the right to seek stipulated penalties, as provided in Section XVII (Stipulated Penalties).

43. Resubmission of Plans.

a. Upon receipt of a notice of disapproval, Respondents shall, within 30 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XVII, shall accrue during the 30-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 41 and 42.

b. Notwithstanding the receipt of a notice of disapproval, Respondents shall proceed to take any action required by any non-deficient portion of the submission that is not dependent on the disapproved portion, unless otherwise directed by EPA in writing. Implementation of any non-deficient portion of a submission shall not relieve Respondents of any liability for stipulated penalties under Section XVII (Stipulated Penalties).

c. Respondents shall not proceed with any Work described in, or dependent upon EPA approval of, the following deliverables until receiving EPA approval for the pertinent deliverable: RI/FS Work Plan and Sampling and Analysis Plan (including the QAPP), Draft Phase 1 Site Characterization Report

and Work Plan Addendum for Phase 2 field work, Draft Phase 2 Site Characterization Report and Work Plan Addendum for Phase 3 field work, Draft Treatability Testing Work Plan and Sampling and Analysis Plan, and Draft Feasibility Study Report. While awaiting EPA approval on these deliverables, Respondents shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth in the RI/FS Work Plan or as otherwise approved by EPA.

d. For all remaining deliverables not enumerated above in subparagraph 43.c., Respondents shall proceed with all subsequent tasks, activities and deliverables without awaiting EPA approval on the submitted deliverable. EPA reserves the right to stop Respondents from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the RI/FS.

44. If EPA disapproves a resubmitted plan, report or other item, or portion thereof, EPA may again direct Respondents to correct the deficiencies. EPA shall also retain the right to modify or develop the plan, report or other item. Respondents shall implement any such plan, report, or item as corrected, modified or developed by EPA, subject only to their right to invoke the procedures set forth in Section XVI (Dispute Resolution).

45. If upon resubmission, a plan, report, or item is disapproved or modified by EPA due to a material defect, Respondents shall be deemed to have failed to submit such plan, report, or item timely and adequately unless Respondents invoke the dispute resolution procedures in accordance with Section XVI (Dispute Resolution) and EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by EPA or superseded by an agreement reached pursuant to that Section. The provisions of Section XVI (Dispute Resolution) and Section XVII (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is not otherwise revoked, substantially modified or superseded as a result of a decision or agreement reached pursuant to the Dispute Resolution process set forth in Section XVI, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVII.

46. In the event that EPA takes over some of the tasks, but not the preparation of the RI Report or the FS Report, Respondents shall incorporate and integrate information supplied by EPA into the final reports.

47. All plans, reports, and other items submitted to EPA under this Settlement Agreement shall, upon approval or modification by EPA, be incorporated into and enforceable under this Settlement Agreement. In the event EPA approves or modifies a portion of a plan, report, or other item submitted to EPA under this Settlement Agreement, the approved or modified portion shall be incorporated into and enforceable under this Settlement Agreement.

48. Neither failure of EPA to expressly approve or disapprove of Respondents' submissions within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Respondents' deliverables, Respondents are responsible for preparing deliverables acceptable to EPA.

XII. QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION

49. Quality Assurance. Respondents shall assure that Work performed, samples taken and analyses conducted conform to the requirements of the SOW, the Quality Assurance Project Plan ("QAPP"), and applicable guidances identified therein. Respondents will assure that field personnel used by Respondents are properly trained in the use of field equipment and in chain of custody procedures. Respondents shall only use laboratories which have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA.

50. Sampling.

a. All results of sampling, tests, modeling or other data (including raw data) generated by Respondents, or on Respondents' behalf, pursuant to this Settlement Agreement, shall be submitted to EPA in the next monthly progress report, or otherwise made available, as described in Paragraph 39 of

this Settlement Agreement. EPA will make available to Respondents validated data generated by EPA unless it is exempt from disclosure by any federal or state law or regulation.

b. Respondents shall verbally notify EPA at least 14 days prior to conducting significant field events as described in the SOW, RI/FS Work Plan or sampling and analysis plan. However, for sampling events during storm flows or storm tides, Respondents shall verbally notify EPA as soon as practicable. At EPA's verbal or written request, or the request of EPA's oversight assistant, Respondents shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) of any samples collected in implementing this Settlement Agreement. All split samples shall be analyzed by the methods identified in the QAPP.

c. Circumstances permitting, EPA shall verbally notify Respondents at least 14 days prior to conducting significant field events relating to the Site, other than emergency response actions, activities conducted pursuant to Paragraph 84 (Work Takeover), or any enforcement-related events that require confidentiality. At Respondents' verbal or written request, EPA shall allow split or duplicate samples to be taken by Respondents (and their authorized representatives) of any samples collected in overseeing this Settlement Agreement or otherwise investigating the Site. All split samples shall be analyzed by the methods identified in the QAPP.

51. Access to Information.

a. Respondents shall provide to EPA, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. If Respondents wish to withhold any documents or information on the basis of privilege, Respondents shall do so in accordance with Paragraph 51.c., below. Respondents shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

b. Respondents may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when it is submitted to EPA, or if EPA has notified Respondents that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondents. Respondents shall segregate and clearly identify all documents or information submitted under this Settlement Agreement for which Respondents assert business confidentiality claims.

c. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege against disclosure recognized by federal law. If the Respondents assert such a privilege in lieu of providing documents, they shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondents. However, no final documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

d. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other information evidencing conditions at the Site.

52. In entering into this Settlement Agreement, Respondents waive any objections to any data gathered or generated by EPA or Respondents in the performance or oversight of the Work that has been verified according to the quality assurance/quality control ("QA/QC") procedures required by the

Settlement Agreement or any Sampling and Analysis Plans prepared by Respondents and approved by EPA in writing. If Respondents object to any other data relating to the RI/FS, Respondents shall submit to EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 30 days of the monthly progress report containing the data.

XIII. SITE ACCESS AND INSTITUTIONAL CONTROLS

53. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by any of Respondents, such Respondents shall, commencing on the Effective Date, provide EPA, and its representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to oversight of this Settlement Agreement.

54. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall use their best efforts to obtain all necessary access agreements within 60 days after the Effective Date, or no fewer than 90 days before access to such property is needed pursuant to the Statement of Work, whichever is later, or as otherwise specified in writing by the EPA Project Coordinator. Respondents shall immediately notify EPA if after using their best efforts they are unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access, unless: EPA has identified the property owner as a potentially responsible party under CERCLA in connection with the Study Area ("PRP"); or Respondents have requested in writing, with supporting evidence, that EPA identify the property owner as a PRP, only until EPA determines, in its sole discretion, not to identify the property owner as a PRP. Respondents shall describe in writing their efforts to obtain access. If Respondents cannot obtain access agreements, EPA may either: (i) obtain access for Respondents or assist Respondents in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate; (ii) perform those tasks or activities with EPA contractors; or (iii) terminate the obligation under the Settlement Agreement that requires the

access agreement in question. Respondents shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XIX (Payment of Response Costs). If EPA performs those tasks or activities with EPA contractors and does not terminate the Settlement Agreement, Respondents shall perform all other activities not requiring access to that property, and shall reimburse EPA for all costs incurred in performing such activities. Respondents shall integrate the results of any such tasks undertaken by EPA into their reports and deliverables.

55. Notwithstanding any provision of this Settlement Agreement, EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XIV. COMPLIANCE WITH OTHER LAWS

56. Respondents shall comply with all applicable local, state and federal laws and regulations when performing the RI/FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-site (as defined in the NCP), including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-site and requires a federal or state permit or approval, Respondents shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. Respondents may seek relief under the provisions of Section XVIII (Force Majeure) of this Settlement Agreement for any delay in performing the Work from a failure to obtain, or a delay in obtaining, any permit required for the Work, provided that Respondents have made proper, timely and complete permit application(s). This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XV. RETENTION OF RECORDS

57. During the pendency of this Settlement Agreement and for a minimum of 10 years after commencement of construction of any remedial action, each Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that

relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. With respect to records and documents relating to performance of the Work, as an alternative to each Respondent maintaining such records and documents, the Respondents collectively may preserve and retain a single set of all non-identical copies of such records and documents (including records or documents in electronic form). Until 10 years after commencement of construction of any remedial action, Respondents shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

58. At the conclusion of this document retention period, Respondents shall notify EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA, Respondents shall deliver any such records or documents to EPA unless a privilege is asserted. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege against disclosure recognized by federal law. If Respondents assert such a privilege, they shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondents. However, no final documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

59. Each Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XVI. DISPUTE RESOLUTION

60. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

61. If Respondents object to any EPA action or decision under this Settlement Agreement, including billings for Future Response Costs, they shall notify EPA in writing of their objection(s) within 14 days of such action (unless a longer time period is provided in or pursuant to this Settlement Agreement), unless the objection(s) has/have been resolved informally. EPA and Respondents shall have 30 days from EPA's receipt of Respondents' written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended by mutual agreement of the parties. Such extension may be granted verbally but must be confirmed in writing.

62. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, the Strategic Integration Manager of the Emergency and Remedial Response Division, EPA Region II will issue a written decision, which shall be based on the administrative record of the dispute and shall be consistent with the terms and objectives of this Agreement. When feasible, Respondents shall be given an opportunity to meet with the Strategic Integration Manager before the decision on the dispute is made. The administrative record of the dispute shall be maintained by EPA and shall consist of all correspondence and material exchanged between EPA and Respondents during the dispute resolution process. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondents' obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section, except where a failure to toll an obligation would necessarily render the dispute moot. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision,

whichever controls, and regardless of whether Respondents agree with the decision.

XVII. STIPULATED PENALTIES

63. Respondents shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 64 to 67 for failure to comply with any of the requirements of this Settlement Agreement specified below, unless excused under Section XVIII (Force Majeure) or otherwise approved by EPA. "Compliance" by Respondents shall include completion of the Work under this Settlement Agreement or any activities contemplated under any RI/FS Work Plan or other plan approved under this Settlement Agreement identified below, in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

64. For the following major deliverables, stipulated penalties shall accrue in the amount of \$2,000 per day, per violation, for the first fourteen (14) days of noncompliance; \$3,000 per day, per violation, for the fifteenth (15th) day through the thirtieth (30th) day of noncompliance; \$5,000 per day, per violation, for all violations lasting beyond thirty (30) days:

- a) An original and any revised RI/FS Work Plan;
- b) An original and any revised RI/FS QAPP, or HSP;
- c) An original and any revised Phase 2 Report;
- d) An original and any revised Phase 3 Report;
- e) An original and any revised Baseline Human Health Risk Assessment Report; and
- f) An original and any revised Baseline Ecological Risk Assessment Report.

65. For the following interim deliverables, stipulated penalties shall accrue in the amount of \$1,000 per day, per violation, for the first fourteen (14) days of noncompliance;

\$2,000 per day, per violation, for the fifteenth (15th) day through the thirtieth (30th) day of noncompliance; and \$3,000 per day per violation for all violations lasting beyond thirty (30) days:

- a) An original and any revised Phase 1 Report;
- b) An original and any revised Identification of Candidate Technologies Memorandum;
- c) An original and any revised Treatability Testing Statement of Work;
- d) An original and any revised Treatability Testing Work Plan, if required;
- e) An original and any revised Treatability Study QAPP and/or HSP;
- f) An original and any revised Treatability Study Evaluation Report, if required;
- g) An original and any revised Pathway Analysis Report;
- h) Task VIII presentation and memorandum regarding Findings of RI, Remedial Action Objective, and Development and Preliminary Screening of Alternatives;
- i) Presentation regarding the draft Phase 3 Report; and
- j) Certificate of Insurance.

66. For the monthly progress reports, payments pursuant to Section XIX, deliverables required by the SOW not listed above, or any other violations of this Settlement Agreement not specified above, stipulated penalties shall accrue in the amount of \$500 per day, per violation, for the first fourteen (14) days of noncompliance; \$1,000 per day, per violation, for the fifteenth (15th) day through the thirtieth (30th) day; \$2,000 per day, per violation, for all violations lasting beyond thirty (30) days.

67. In the event that EPA assumes performance of the Work pursuant to Paragraph 84 of Section XXI (Reservation of Rights by EPA), Respondents shall be liable for a stipulated penalty in the amount of \$2,500,000. EPA agrees that any penalty assessed against Respondents under this Paragraph shall be reduced, if appropriate, by the percentage of Work completed by the Respondents. This Paragraph shall not apply to any EPA activities under Paragraph 54 in which EPA obtains access or performs Work because Respondents are unable to obtain access, provided Respondents have complied with the requirements of Paragraph 54.

68. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section XI (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 16th day after EPA's receipt of such submission until the date that EPA notifies Respondents of any deficiency; and (2) with respect to a decision by the Strategic Integration Manager of the Emergency and remedial Response Division, EPA Region II, during the period, if any, beginning on the 31st day after the Negotiation Period begins until the date that the Strategic Integration Manager issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

69. Following EPA's determination that Respondents have failed to comply with a requirement of this Settlement Agreement, EPA may give Respondents written notification of the same and describe the noncompliance. In addition, EPA may send Respondents a written demand for the payment of stipulated penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondents of a violation.

70. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondents' receipt from EPA of a demand for payment of the penalties, unless Respondents invoke the dispute resolution procedures in accordance with Section XVI (Dispute Resolution). All payments to EPA under this Section shall indicate that the payment is for stipulated

penalties, and shall be remitted via Electronic Funds Transfer ("EFT"), along with the following information, to EPA's Account as follows:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT Address = FRNYUS33
33 Liberty Street
New York, NY 10045
Name of Party making payment
EPA Index Number: CERCLA 02-2008-2011
Site/Spill Identifier Number: 02C7
Field Tag 4200 of the Fedwire message should read "D
68010727 Environmental Protection Agency"

To ensure that a payment is properly recorded, a letter should be sent, within one week of the EFT, which references the date of the EFT, the payment amount, that the payment is for stipulated penalties, the name of the Site, the case Index number, and the name and address of the party making payment to the United States as specified in Paragraph 31 and also to:

U.S. Environmental Protection Agency
26 W. Martin Luther King Drive
Cincinnati Finance Center, MS: NWD
Cincinnati, Ohio 45268

or:

AcctsReceivable.CINWD@epa.gov

71. The payment of penalties shall not alter in any way Respondents' obligation to complete performance of the Work required under this Settlement Agreement.

72. Penalties shall continue to accrue as provided in Paragraph 68 during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

73. If Respondents fail to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondents shall pay Interest on the unpaid

balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 70.

74. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondents' violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(1) of CERCLA, 42 U.S.C. § 9622(1), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 122(1) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of willful violation of this Settlement Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XXI (Reservation of Rights by EPA), Paragraph 84. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XVIII. FORCE MAJEURE

75. Respondents agree to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, *force majeure* is defined as any event arising from causes beyond the control of Respondents or of any entity controlled by Respondents, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondents' best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

76. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondents shall notify EPA orally within two (2) Working Days of when Respondents first knew that the event was likely to cause a delay. Within five (5) Working Days thereafter, Respondents shall provide to EPA in writing an explanation and description

of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondents' rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim; and a statement as to whether, in the opinion of Respondents, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

77. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will promptly notify Respondents in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will promptly notify Respondents in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XIX. PAYMENT OF RESPONSE COSTS

78. Payments of Future Response Costs.

a. Respondents shall pay EPA all Future Response Costs not inconsistent with the NCP. EPA shall use the amount placed in the Berry's Creek Special Account prior to the Effective Date of this Settlement Agreement for such Future Response costs before sending a bill to Respondents for Future Response Costs, and shall expressly subtract such amount from the first bill sent to Respondents for Future Response Costs. On a periodic basis, EPA will send Respondents a bill requiring payment of such costs that includes a Superfund Cost Recovery Package Imaging and On-line System ("SCORPIOS") report for the direct and indirect costs incurred by EPA and its contractors.

Respondents shall make all payments within 60 days of receipt of each bill, except as otherwise provided in Paragraph 80 of this Settlement Agreement, by remitting the amount of those costs via EFT, along with the following information, to EPA's Account as follows:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT Address = FRNYUS33
33 Liberty Street
New York, NY 10045
Name of Party making payment
EPA Index Number: CERCLA 02-2008-2011
Site/Spill Identifier Number: 02C7
Field Tag 4200 of the Fedwire message should read "D
68010727 Environmental Protection Agency"

To ensure that a payment is properly recorded, a letter should be sent, within one week of the EFT, which references the date of the EFT, the payment amount, that the payment is for response costs, the name of the Site, the case Index number, and the name and address of the party making payment to the United States as specified in Paragraph 31 and also sent to:

U.S. Environmental Protection Agency
26 W. Martin Luther King Drive
Cincinnati Finance Center, MS: NWD
Cincinnati, Ohio 45268

or:

AcctsReceivable.CINWD@epa.gov

b. The total amount to be paid by Respondents pursuant to Subparagraph 78.a. shall be deposited in the Berry's Creek Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund upon completion of all response actions at or in connection with the Site.

79. If Respondents do not pay Future Response Costs within 60 days of Respondents' receipt of a bill under Paragraph 78, Respondents shall pay Interest on the unpaid balance of Future

Response Costs: The Interest on unpaid Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. If EPA receives a partial payment, Interest shall accrue on any unpaid balance. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section, including but not limited to, payments of stipulated penalties pursuant to Section XVII. Respondents shall make all payments required by this Paragraph in the manner described in Paragraph 78.

80. Respondents may contest payment of any Future Response Costs under Paragraph 78 if they determine that EPA has made an accounting error or if they allege that a cost item that is included represents costs that are inconsistent with the NCP. Such objection shall be made in writing within 60 days of receipt of the bill and must be sent to the EPA Project Coordinator. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Respondents shall within the 60 day period pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 78. Simultaneously, Respondents shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of New Jersey and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondents shall send to the EPA Project Coordinator a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Respondents shall initiate the Dispute Resolution procedures in Section XVI (Dispute Resolution). If EPA prevails in the dispute, within 5 Working Days of the resolution of the dispute, Respondents shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 78. If Respondents prevail concerning any aspect of the contested costs, Respondents shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to EPA in the manner described in Paragraph 78. Respondents shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this

Paragraph in conjunction with the procedures set forth in Section XVI (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondents' obligation to reimburse EPA for its Future Response Costs.

XX. COVENANT NOT TO SUE BY EPA

81. In consideration of the actions that will be performed and the payments that will be made by Respondents under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondents of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XIX. This covenant not to sue extends only to Respondents and does not extend to any other person.

XXI. RESERVATIONS OF RIGHTS BY EPA

82. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law.

83. The covenant not to sue set forth in Section XX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:

- a. claims based on a failure by Respondents to meet a requirement of this Settlement Agreement;
- b. liability for costs not included within the definitions of Past Response Costs and Future Response Costs;
- c. liability for performance of response actions other than the Work;
- d. criminal liability;
- e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and
- g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

84. Work Takeover.

a. In the event EPA determines that Respondents have (i) ceased implementation of any portion of the Work, or (ii) are seriously or repeatedly deficient or late in their performance of the Work, or (iii) are implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may issue a written notice ("Work Takeover Notice") to Respondents. Any Work Takeover Notice issued by EPA will specify the grounds on which the notice was issued and provide Respondents a period of 21 days within which to remedy the circumstances giving rise to issuance of the notice.

b. If, after expiration of the 21-day notice period specified in Paragraph 84.a., Respondents have not remedied to EPA's satisfaction the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice, EPA may at any time thereafter assume the performance of all or any portions of the Work as EPA deems necessary ("Work Takeover"). EPA shall notify Respondents in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this Paragraph 84.b.

c. Respondents may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. However, notwithstanding Respondents' invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover under Paragraph 84.b. until the earlier of (i) the date that Respondents remedy, to EPA's satisfaction, the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice or (ii) the date that a final decision is rendered in accordance with Section XVI (Dispute Resolution), requiring EPA to terminate such Work Takeover.

d. After commencement and for the duration of any Work Takeover, EPA shall have prompt access to and benefit of any performance guarantee(s) in an amount sufficient to fund the estimated costs of the remaining Work pursuant to Section XXVII of the Settlement Agreement, in accordance with the provisions of Paragraph 101 of that Section. If and to the extent that EPA is unable to secure the resources guaranteed under any such performance guarantee(s) and Respondents fail to remit a cash amount up to but not exceeding the amount needed to fund the estimated cost of the remaining Work, all in accordance with Paragraph 101, any unreimbursed costs incurred by EPA in performing Work under the Work Takeover shall be considered Future Response Costs that Respondents shall pay in accordance with Section XIX (Payment of Response Costs). Notwithstanding any other provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXII. COVENANT NOT TO SUE BY RESPONDENTS

85. Except as specifically provided in Paragraph 85.d. below, Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of

CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of the Work or arising out of the response actions for which the Future Response Costs have or will be incurred, including any claim under the United States Constitution, the New Jersey State Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or payment of Future Response Costs.

d. This Covenant Not to Sue by Respondents shall not extend to, and Respondents specifically reserve: (1) any and all claims or causes of action under Section 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, against the United States as a "covered person" (within the meaning of Section 107(a) of CERCLA, 42 U.S.C. § 9607(a)) with respect to the Work, Future Response Costs, and this Settlement Agreement, based solely on actions by the United States other than the exercise of the government's authority under CERCLA; and (2) any claims or causes of action under the Tucker Act, 28 U.S.C. § 1491, against the United States with respect to the Work, Future Response Costs, and this Settlement Agreement based solely on contracts that do not address or relate to the exercise of the government's authority under CERCLA.

86. These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 83(b), (c), and (e) - (g), but only to the extent that Respondents' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

87. Respondents reserve, and this Settlement Agreement is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his office or employment under circumstances where the United States, if a private person, would be liable to

the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of Respondents' plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which waiver of sovereign immunity is found in a statute other than CERCLA.

88. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

89. Nothing in this Settlement Agreement shall be construed as a waiver by a Respondent of any right it may have to include costs incurred in implementation of this Settlement Agreement, the Work, Future Response Costs, or any other work at or in conjunction with the Site in its allowable costs for purposes of pricing under contracts with the United States, to the extent allowed by law, rule or regulation.

XXIII. OTHER CLAIMS

90. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents.

91. Except as expressly provided in Section XX (Covenant Not to Sue by EPA) and Section XXIV (Contribution), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

92. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial

review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIV. CONTRIBUTION

93. a. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. Section 9613(f)(2) and that Respondents are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Future Response Costs. Notwithstanding such protections against contribution actions or claims by non-parties to this Settlement Agreement, the Respondents agree that they may allocate or re-allocate any and all response costs incurred in connection with the Settlement Agreement among themselves, either consensually or through civil actions to the extent not otherwise precluded by agreement of the Respondents.

b. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondents have, as of the Effective Date, resolved their liability to the United States for the Work and Future Response Costs.

c. Nothing in this Settlement Agreement precludes the United States or Respondents from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any persons not parties to this Settlement Agreement. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and (3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

XXV. INDEMNIFICATION

94. Respondents shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all

claims or causes of action arising from, or on account of negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondents agree to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondents in carrying out activities pursuant to this Settlement Agreement. Neither Respondents nor any such contractor shall be considered an agent of the United States.

95. The United States shall give Respondents written notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondents prior to settling such claim.

96. Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site. In addition, Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site.

XXVI. INSURANCE

97. At least 30 days prior to commencing any On-Site Work under this Settlement Agreement, Respondents shall secure, and shall maintain for the duration of this Settlement Agreement, comprehensive general liability insurance and automobile insurance with limits of 5 million dollars, combined single limit, naming the EPA as an additional insured. Within the same period, Respondents shall provide EPA with certificates of such

insurance and, if requested, a copy of each insurance policy. Respondents shall submit such certificates and, if requested, copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondents in furtherance of this Settlement Agreement. If Respondents demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondents need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVII. PERFORMANCE GUARANTEE

98. In order to ensure the full and final completion of the Work, Respondents shall establish and maintain a Performance Guarantee for the benefit of EPA in the amount of \$18,000,000.00 (hereinafter "Estimated Cost of the Work") in one or more of the following forms, which must be satisfactory in form and substance to EPA:

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work that is issued by a surety company among those listed as acceptable sureties on Federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by one or more financial institution(s) (i) that has the authority to issue letters of credit and (ii) whose letter-of-credit operations are regulated and examined by a U.S. Federal or State agency;

c. a trust fund established for the benefit of EPA that is administered by a trustee (i) that has the authority to act as a trustee and (ii) whose trust operations are regulated and examined by a U.S. Federal or State agency;

d. a policy of insurance that (i) provides EPA with acceptable rights as a beneficiary thereof; and (ii) is issued by an insurance carrier (a) that has the authority to issue insurance

policies in the State of New Jersey and (b) whose insurance operations are regulated and examined by the New Jersey Department of Banking and Insurance;

e. A demonstration by one or more Respondents that each such Respondent meets the financial test criteria of 40 C.F.R. § 264.143(f) with respect to the Estimated Cost of the Work, provided that all other requirements of 40 C.F.R. § 264.143(f) are satisfied; or

f. A written guarantee to fund or perform the Work executed in favor of EPA by one or more of the following: (i) a direct or indirect parent company of a Respondent, or (ii) a company that has a "substantial business relationship" (as defined in 40 C.F.R. § 264.141(h)) with at least one Respondent; provided, however, that any company providing such a guarantee must demonstrate to the satisfaction of EPA that it satisfies the financial test requirements of 40 C.F.R. § 264.143(f) with respect to the Estimated Cost of the Work that it proposes to guarantee hereunder.

99. a. Respondents have selected, and EPA has approved, as an initial Performance Guarantee, a trust fund pursuant to a Trust Agreement substantially in the form attached hereto as Appendix D. Within ninety (90) days after the Effective Date of this Settlement Agreement, Respondents shall execute or otherwise finalize all instruments or other documents required in order to make the selected Performance Guarantee legally binding in a form substantially identical to the Trust Agreement attached hereto as Appendix D and submit all executed and/or otherwise finalized instruments or other documents required in order to make the selected Performance Guarantee legally binding to EPA's Project Coordinator, with a copy to EPA's Berry's Creek Study Area Attorney.

b. If at any time during the effective period of this Settlement Agreement, the Respondents provide a Performance Guarantee for completion of the Work by means of a demonstration or guarantee pursuant to Paragraph 98(e) or Paragraph 98(f) above, Respondents shall also comply with the other relevant requirements of 40 C.F.R. § 264.143(f), 40 C.F.R. § 264.151(f), and 40 C.F.R. § 264.151(h)(1) relating to these methods unless otherwise provided in this Settlement Agreement, including but not limited to (i) the initial submission of required financial reports and statements from the relevant entity's chief financial

officer and independent certified public accountant; (ii) the annual re-submission of such reports and statements within ninety days after the close of each such entity's fiscal year; and (iii) the notification of EPA within ninety days after the close of any fiscal year in which such entity no longer satisfies the financial test requirements set forth at 40 C.F.R. § 264.143(f)(1). For purposes of the Performance Guarantee methods specified in this Section XXVII, references in 40 C.F.R. Part 264, Subpart H, to "closure," "post-closure," and "plugging and abandonment" shall be deemed to refer to the Work required under this Settlement Agreement, and the terms "current closure cost estimate," "current post-closure cost estimate," and "current plugging and abandonment cost estimate" shall be deemed to refer to the Estimated Cost of the Work.

100. In the event that EPA determines at any time that a Performance Guarantee provided by any Respondent pursuant to this Section is inadequate or otherwise no longer satisfies the requirements set forth in this Section, whether due to an increase in the estimated cost of completing the Work or for any other reason, or in the event that any Respondent becomes aware of information indicating that a Performance Guarantee provided pursuant to this Section is inadequate or otherwise no longer satisfies the requirements set forth in this Section, whether due to an increase in the estimated cost of completing the Work or for any other reason, Respondents, within thirty days of receipt of notice of EPA's determination or, as the case may be, within thirty days of any Respondent becoming aware of such information, shall obtain and present to EPA for approval a proposal for a revised or alternative form of Performance Guarantee listed in Paragraph 98 of this Settlement Agreement that satisfies all requirements set forth in this Section XXVII. In seeking approval for a revised or alternative form of Performance Guarantee, Respondents shall follow the procedures set forth in Paragraph 102(b)(ii) of this Settlement Agreement. Respondents' inability to post a Performance Guarantee for completion of the Work shall in no way excuse performance of any other requirements of this Settlement Agreement, including, without limitation, the obligation of Respondents to complete the Work in strict accordance with the terms hereof.

101. The commencement of any Work Takeover pursuant to Paragraph 84 of this Settlement Agreement shall trigger EPA's right to receive the benefit of any Performance Guarantee(s) provided pursuant to Paragraph 98.a., b., c., d., or f., and at

such time EPA shall have prompt access to resources guaranteed under any such Performance Guarantee(s), whether in cash or in kind, as needed to continue and complete the Work assumed by EPA under the Work Takeover. If for any reason EPA is unable to promptly secure the resources guaranteed under any such Performance Guarantee(s), whether in cash or in kind, necessary to continue and complete the Work assumed by EPA under the Work Takeover, or in the event that the Performance Guarantee involves a demonstration of satisfaction of the financial test criteria pursuant to Paragraph 98.e., Respondents shall immediately upon written demand from EPA deposit into an account specified by EPA, in immediately available funds and without setoff, counterclaim, or condition of any kind, a cash amount up to but not exceeding the estimated cost of the remaining Work to be performed as of such date, as determined by EPA.

102. Modification of Amount and/or Form of Performance Guarantee.

a. Reduction of Amount of Performance Guarantee.

If Respondents believe that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 98 above, Respondents may, on any anniversary date of entry of this Settlement Agreement, or at any other time agreed to by the Parties, petition EPA in writing to request a reduction in the amount of the Performance Guarantee provided pursuant to this Section so that the amount of the Performance Guarantee is equal to the estimated cost of the remaining Work to be performed. Respondents shall submit a written proposal for such reduction to EPA that shall specify, at a minimum, the cost of the remaining Work to be performed and the basis upon which such cost was calculated. In seeking approval for a revised or alternative form of Performance Guarantee, Respondents shall follow the procedures set forth in Paragraph 102.b.(ii) of this Settlement Agreement. If EPA decides to accept such a proposal, EPA shall notify the petitioning Respondents of such decision in writing. After receiving EPA's written acceptance, Respondents may reduce the amount of the Performance Guarantee in accordance with and to the extent permitted by such written acceptance. In the event of a dispute, Respondents may reduce the amount of the Performance Guarantee required hereunder only in accordance with a final administrative or judicial decision resolving such dispute. No

change to the form or terms of any Performance Guarantee provided under this Section, other than a reduction in amount, is authorized except as provided in Paragraphs 100 or 102.b. of this Settlement Agreement.

b. Change of Form of Performance Guarantee.

(i) If, after the Effective Date of this Settlement Agreement, Respondents desire to change the form or terms of any Performance Guarantee(s) provided pursuant to this Section, Respondents may, on any anniversary date of entry of this Settlement Agreement, or at any other time agreed to by the Parties, petition EPA in writing to request a change in the form of the Performance Guarantee provided hereunder. The submission of such proposed revised or alternative form of Performance Guarantee shall be as provided in Paragraph 102.b.(ii) of this Settlement Agreement. Any decision made by EPA on a petition submitted under this subparagraph b.(i) shall be made in EPA's sole and unreviewable discretion, and such decision shall not be subject to challenge by Respondents pursuant to the dispute resolution provisions of this Settlement Agreement or in any other forum.

(ii) Respondents shall submit a written proposal for a revised or alternative form of Performance Guarantee to EPA which shall specify, at a minimum, the estimated cost of the remaining Work to be performed, the basis upon which such cost was calculated, and the proposed revised form of Performance Guarantee, including all proposed instruments or other documents required in order to make the proposed Performance Guarantee legally binding. The proposed revised or alternative form of Performance Guarantee must satisfy all requirements set forth or incorporated by reference in this Section. Respondents shall submit such proposed revised or alternative form of Performance Guarantee to the EPA Project Coordinator in accordance with Paragraph 31. EPA shall notify Respondents in writing of its decision to accept or reject a revised or alternative Performance Guarantee submitted pursuant to this subparagraph. Within ten days after receiving a written decision approving the proposed revised or alternative Performance Guarantee, Respondents shall execute and/or otherwise finalize all instruments or other documents required in order to make the selected Performance Guarantee(s) legally

binding in a form substantially identical to the documents submitted to EPA as part of the proposal, and such Performance Guarantee(s) shall thereupon be fully effective. Respondents shall submit all executed and/or otherwise finalized instruments or other documents required in order to make the selected Performance Guarantee(s) legally binding to the EPA Project Coordinator within thirty days of receiving a written decision approving the proposed revised or alternative Performance Guarantee in accordance with Paragraph 31.

c. Release of Performance Guarantee. If Respondents receive written notice from EPA in accordance with Section XXXI hereof that the Work has been fully and finally completed in accordance with the terms of this Settlement Agreement, or if EPA otherwise so notifies Respondents in writing, Respondents may thereafter release, cancel, or discontinue the Performance Guarantee(s) provided pursuant to this Section. Respondents shall not release, cancel, or discontinue any Performance Guarantee provided pursuant to this Section except as provided in this subparagraph. In the event of a dispute, Respondents may release, cancel, or discontinue the Performance Guarantee(s) required hereunder only in accordance with a final administrative or judicial decision resolving such dispute.

XXVIII. INTEGRATION/APPENDICES

103. This Settlement Agreement and its appendices and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the list of Respondents.

"Appendix B" is the SOW.

"Appendix C" is the map of the Site

"Appendix D" is the form of Trust Agreement

XXIX. ADMINISTRATIVE RECORD

104. Pursuant to CERCLA and the NCP, EPA will determine the contents of the administrative record file for selection of the remedial action. Respondents shall submit to EPA documents developed during the course of the Work upon which selection of the response action may be based. Consistent with Paragraph 51, upon request of EPA, Respondents shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Consistent with Paragraph 51, upon request of EPA, Respondents shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Respondents and state, local or other federal authorities concerning selection of the response action. At EPA's discretion, Respondents shall establish a community information repository at or near the Site, to house one copy of the administrative record.

XXX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

105. This Settlement Agreement shall be effective on the date that a fully-executed copy of said Settlement Agreement is received by counsel for Respondents ("Effective Date").

106. This Settlement Agreement may be amended by mutual agreement of EPA and Respondents. Amendments shall be in writing and shall be effective when signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to the Settlement Agreement. However, the EPA Project Coordinator and the Respondents' Designated Project Coordinator may by mutual agreement make minor modifications to the requirements of the RI/FS Work Plan, specifically modifications that do not materially or significantly affect the nature, scope, or timing of the work to be performed. Any such modifications must be in writing and signed by both Project Coordinators. The effective date of the modification shall be the date on which the letter from EPA's Project Coordinator is signed.

107. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified. EPA Project Coordinator may in writing extend any deadline under this Settlement Agreement.

XXXI. NOTICE OF COMPLETION OF WORK

108. EPA shall review the final deliverable of the RI/FS Work Plan and determine whether all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including but not limited to, retention of records and payment of Future Response Costs. Upon such determination, EPA will provide written notice to Respondents. Such notice shall not be unreasonably withheld. If EPA determines that any Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondents, provide a list of the deficiencies, and require that Respondents correct such deficiencies. Failure by Respondents to correct such deficiencies shall be a violation of this Settlement Agreement.

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



DATE: 5/1/08

GEORGE PAVLOU, DIRECTOR
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region II

APPENDIX A

RESPONDENTS TO ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY, BERRY'S CREEK STUDY AREA

U.S. EPA Index No. II-CERCLA-2007-2006

1. 3M Company
2. ABB Inc. for Bailey Controls
3. Air Products and Chemicals, Inc.
4. Akzo Nobel Coatings Inc.
5. Alcoa Inc.
6. Allied Chemical (predecessor company to Honeywell)
7. Andersen Land Corp.
8. Arkema Inc.
9. Ashland Inc.
10. Avery Dennison Corporation, as successor to Paxar Corporation
11. BASF on its own behalf and on behalf of BASF Catalysts, LLC
12. Becton, Dickinson and Company
13. Belmont Metals, Inc.
14. Benjamin Moore & Co.
15. Ber Mar Manufacturing Corp.
16. Bristol-Myers Squibb Company
17. Browning-Ferris Industries of New Jersey, Inc.
18. CBS Corporation (f/k/a Viacom Inc., f/k/a Westinghouse Electric Corporation)
19. Chemcoat, Inc.
20. Ciba Corporation (f/k/a Ciba Specialty Chemicals Corporation)
21. CNA Holdings, Inc.
22. Cognis Corporation, as successor to Henkel Corporation, for itself and on behalf of Henkel Corporation
23. Columbia University
24. Congoleum Corporation
25. Conopco, Inc (formerly d/b/a Day-Baldwin Inc.)
26. Continental Holdings Inc., as successor in interest for certain limited purposes to Continental Can Company, Inc.
27. Cosan Chemical Corporation
28. Cycle Chem Inc.
29. D.F. Goldsmith Chemical & Metal Corp.
30. Dri-Print Foils, Inc. (subsidiaries and successors include: Beatrice Foods Co., Beatrice Companies, Inc., Beatrice Company, Hunt-Wesson, Inc., ConAgra

- Grocery Products Company, ConAgra Grocery Products Company, LLC, API-Foils, Inc.)
31. E.I. du Pont de Nemours and Company
 32. Exxon Mobil Corporation on behalf of itself, its affiliates ExxonMobil Oil Corporation, formerly known as Mobil Oil Corporation, and Exxon Company, USA
 33. FUJIFILM Graphic Systems U.S.A., Inc.
 34. Garfield Refining Company
 35. General Electric Co.
 36. General Motors Corporation
 37. Hexion Specialty Chemicals, Inc. (f/k/a Borden Chemical, Inc.)
 38. Hoffmann-La Roche Inc.
 39. Honeywell International, Inc.
 40. ISP Environmental Services Inc.
 41. John L. Armitage & Co.
 42. Johnson & Johnson
 43. Kirker Enterprises, Inc.
 44. L.E. Carpenter & Co.
 45. LANXESS Corporation as successor in interest to Bayer solely for this matter
 46. Lucent Technologies Inc.
 47. Mack Trucks, Inc.
 48. Mallinckrodt Baker, Inc.
 49. Mallinckrodt Inc.
 50. Manor Care, Inc. and all current and former subsidiaries, affiliates, predecessors, successors and all other entities, both current and former, affiliated with the above-referenced entities, including Manor Care of America, Inc., ManorCare Health Services, Inc. (f/k/a Manor Healthcare Corp.), and Portfolio One, Inc., (f/k/a and successor in interest to Chemline, Inc. and Almo Anti Pollution, Inc.)
 51. Matheson Tri-Gas, Inc.
 52. Merck & Co., Inc.
 53. Monroe Chemical, Inc.
 54. Morton International, Inc.
 55. MTA New York City Transit
 56. Nepera, Inc.
 57. New England Laminates Co., Inc.
 58. New Jersey Institute of Technology
 59. NL Industries, Inc.
 60. Northrop Grumman Systems Corporation on behalf of Litton Systems/Fitchburg Coated Products and Grumman Corp.
 61. Occidental Chemical Corporation, as successor to Diamond Shamrock Chemicals Company
 62. Olin Corporation

63. Osram Sylvania, Inc.
64. Pan Technology, Inc.
65. Permacel
66. Pfizer Inc.
67. Pharmacia Corp., by its Attorney-In-Fact Monsanto Corporation
68. PSEG Fossil LLC
69. Reckitt Benckiser Inc.
70. Revlon Consumer Products Corporation
71. Rohm and Haas Company
72. Rohm and Haas Company, on behalf of Bee Chemical Company for this matter only
73. Seagrave Coatings Corp. (a/k/a Chemray Coatings Corp.)
74. SI Group, Inc.
75. Siegfried (USA), Inc. (formerly Ganes Chemicals)
76. Simon Wrecking Company, Inc., Simon Resources, Inc. and Mid-State Trading Co.
77. SmithKline Beecham Corporation
78. Spectrum Brands o/b/o Rayovac
79. Sumitomo Machinery Corporation of America
80. Sun Chemical Corporation
81. Tate & Lyle Ingredients Americas, Inc. (f/k/a A.E. Staley Manufacturing Company)
82. Technical Coatings Co.
83. Tennessee Gas Pipeline Company (f/k/a Tenneco, Inc.)
84. The Custodial Trust by and through LePetomane III, Inc., not individually but solely in its representative capacity as Custodial Trust Trustee
85. The Dow Chemical Company
86. The Gillette Company
87. The Port Authority of New York & New Jersey
88. The Wella Corporation
89. Trane U.S. Inc. (f/k/a American Standard Inc.)
90. Union Carbide Corporation
91. United Technologies Corporation on behalf of Inmont Corporation
92. Universal Oil Products (subsidiary of Honeywell)
93. University of Minnesota
94. Veolia ES Technical Solutions, L.L.C., as successor by merger to Marisol, Incorporated
95. W.A. Baum Company, Inc.
96. Warner-Lambert Company LLC., a wholly-owned subsidiary of Pfizer Inc.
97. Western Michigan University
98. Wyeth Holdings Corporation (f/k/a American Cyanamid Company)

APPENDIX B
STATEMENT OF WORK FOR
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
BERRY’S CREEK STUDY AREA
BERGEN COUNTY, NEW JERSEY

TABLE OF CONTENTS

I.	INTRODUCTION	2
II.	TASK I - RI/FS WORK PLAN.....	3
III.	TASK II - STAKEHOLDER INVOLVEMENT	7
IV.	TASK III - SITE CHARACTERIZATION	8
V.	TASK IV – FEASIBILTIIY STUDY - IDENTIFICATION OF CANDIDATE TECHNOLOGIES AND POTENTIAL REMEDIAL ALTERNATIVES.....	16
VI.	TASK V – PHASE 2 SITE CHARACTERIZATION REPORT AND WORK PLAN ADDENDUM (Phase 2 Report).....	17
VII.	TASK VI - BASELINE RISK ASSESSMENT.....	18
VIII.	TASK VII – PHASE 3 REPORT	23
IX.	TASK VIII - DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES	24
X.	TASK IX - TREATABILITY STUDIES	27
XI.	TASK X – FEASIBILITY STUDY REPORT.....	30

I. INTRODUCTION

- A. The purpose of this Remedial Investigation/Feasibility Study (“RI/FS”) for the Berry’s Creek Study Area (BCSA) is to characterize the nature and extent of contamination as provided in this SOW and evaluate remedial alternatives that mitigate potential human health and ecological risks associated with the biouptake and environmental fate and transport of chemicals from historical and on-going sources of hazardous substance releases from various facilities, while taking into account other sources of chemical and non-chemical stressors and relevant background conditions. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies, if needed. This iterative and adaptive approach is appropriate based on the necessary integration of numerous off-property assessments and the potential impacts of numerous other past and on-going sources (outfalls, non-point sources, and sediment sources) in the BCSA.
- B. Respondents shall conduct this RI/FS and shall produce draft reports that are in accordance with this statement of work (“SOW”), the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988) and the “Contaminated Sediment Remediation Guidance for Hazardous Waste Sites” (U.S. EPA, Office of Emergency and Remedial Response, December 2005 and any other relevant literature that EPA uses in conducting an RI/FS, as well as any additional requirements in the Administrative Order. The RI/FS Guidance describes a report format and the report content, although adaptations will be required to match the specific needs of a megasite evaluation of a watershed study area. Respondents shall furnish all necessary personnel, materials, and services needed for, or incidental to, the performance of the RI/FS, except as otherwise specified in the administrative order.
- C. Under a separate Administrative Settlement Agreement and Order On Consent for Scoping Activities (U.S. EPA Index No. II-CERCLA-2007-2006), the Respondents agreed to conduct RI/FS Scoping Activities for the BCSA. The purpose of the Scoping Activities is to further advance the understanding of the Study Area to support the completion of preliminary conceptual site models (CSMs) and the refinement of study questions that must be addressed by the BCSA RI/FS in order to achieve its purpose. Results of the Scoping Activities will be incorporated into the RI/FS as they become available.
- D. At the completion of the RI/FS for the Site, EPA will be responsible for the selection of the remedy for the Site and will document the selection in a ROD. The remedial action alternative selected by EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and will address the statutory preference

for treatment as a principal element. An adaptive site management approach shall be considered, as the types of remedial actions are likely to vary across the study area and more than one remedial phase is likely given the size and complexity of the Site. The final RI/FS report (including the baseline risk assessment reports), as adopted by EPA, will, with the administrative record, form the basis for the selection of the remedy for the Site and will provide the information necessary to support the development of the ROD.

- E. As specified in CERCLA Section 104(a)(1), as amended by SARA, EPA will provide oversight of the Respondent's activities throughout the RI/FS. Respondents shall support EPA's initiation and conduct of activities related to the implementation of oversight activities.

II. TASK I - RI/FS WORK PLAN

- A. The RI/FS is conducted to gather sufficient data and information necessary to characterize the nature and extent of contamination and the fate and transport and biouptake of contaminants at the Site in order to support the selection of a remedy for the Site that will reduce or eliminate risks to human health or the environment associated with hazardous substance contamination at the Site. Respondents shall follow the Uniform Federal Policy for Implementing Quality Systems (UFP-QS), EPA-505-F-03-001, March 2005 or newer, Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), Parts 1, 2 and 3, EPA-505-B-04-900A, B and C, March 2005 or newer, and other guidance documents referenced in the aforementioned guidance documents. The UFP documents may be found at: <http://www.epa.gov/fedfac/documents/qualityassurance.htm> . In addition, the guidance and procedures located in the EPA Region 2 DESA/HWSB web site: <http://www.epa.gov/region02/qa/documents.htm>, as well as other OSWER directives and EPA Region 2 policies should be followed as appropriate. Subsequent amendments to the above, upon notification by EPA to Respondents of such amendments, shall apply only to procedures conducted after such notification.
- B. The RI/FS achieves its objectives by determining the horizontal and vertical distribution and concentrations of hazardous substances in the surface water, sediments, wetlands and biota, their association with the Site, as well as the fate and transport and biouptake of contaminants within the Site. A specific set of BCSA study questions will be refined based on those initially identified in the Framework Document to guide the strategic design of the field studies and subsequent analyses. The RI/FS will be designed to take into account the urban nature of the watershed and the residual effects of past and current conventional parameter stressors in addition to the hazardous substances that are the focus of the RI/FS.
- C. Work sessions between the Respondents and the EPA will be used to facilitate discussion of technical issues and analyses throughout the RI/FS process.

- D. Respondents shall prepare a Work Plan for the RI/FS using the Framework Document or similar work that addresses the study questions and provides the data needs, taking into account the available information for the BCSA and the results of the Scoping Activities that are available at the time the Work Plan is prepared.
- E. Before preparing the Work Plan for RI/FS activities, Respondents should review the existing data for the Site.
- F. Respondents will have conducted several detailed site reconnaissance visits to the Site (initiated as a Scoping Activity) prior to preparing the Work Plan to assist in developing a conceptual understanding of sources and areas of contamination as well as potential exposure pathways and receptors at the Site. This information will be utilized to better define the project and to determine the extent of additional data necessary to characterize the Site, better define potential ARARs, and narrow the range of preliminarily identified remedial alternatives.
- G. The Respondents have reviewed the Framework Document, collected and analyzed existing data, and conducted visits to the Site, and will develop a Work Plan pursuant to this SOW. Project planning activities include those tasks described below as well as developing a quality assurance project plan and identifying health and safety protocols.
- H. RI/FS Work Plan and Schedule. Within one hundred and twenty (120) days of the Effective Date of this Settlement Agreement, Respondents shall submit to EPA a detailed Work Plan for the completion of the RI/FS. The RI/FS Work Plan shall include, among other things, a detailed schedule for RI/FS activities at the Site. If EPA disapproves, or requires revisions to, the RI/FS Work Plan in whole or in part, Respondents shall amend and submit to EPA a revised Work Plan which is responsive to the EPA comments, in accordance with Section XI of this Settlement Agreement. The RI/FS Work Plan shall include:
 - 1. Quality Assurance/Quality Control Project Plan (“QAPP”), which shall be prepared in accordance with the Uniform Federal Policy for Implementing Quality Systems (UFP-QS), EPA-505-F-03-001, March 2005 or newer, Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), Parts 1, 2 and 3, EPA-505-B-04-900A, B and C, March 2005 or newer, and other guidance documents referenced in the aforementioned guidance documents and which shall include the following elements:
 - a. A detailed description of the sampling, analysis, and monitoring that shall be performed during the RI/FS, consistent with this Administrative Order. At a minimum, the QAPP shall provide the following:
 - b. A plan for the delineation of contamination in the surface water;
 - c. A plan for the delineation of contamination in the sediments and

- d. A plan for the determination of contaminant levels in biota found at the Site.
2. All sampling, analysis, data assessment, and monitoring shall be performed in accordance with the guidance provided at <http://www.epa.gov/fedfac/documents/qualityassurance.htm>, the guidance and procedures located in the EPA Region 2 DESA/HWSB web site: <http://www.epa.gov/region02/qa/documents.htm>, other OSWER directives and EPA Region 2 policies, as appropriate, or an alternate EPA-approved test method, and the guidelines set forth in this Administrative Order. All testing methods and procedures shall be fully documented and referenced to established methods or standards.
- a. The QAPP shall also specifically include the following items:
 - i. An explanation of the way(s) the sampling, analysis, testing, and monitoring will produce data for the RI/FS ;
 - ii. A detailed description of the sampling, analysis, and testing to be performed, including sampling methods, analytical and testing methods, sampling locations and frequency of sampling;
 - iii. A map depicting sampling locations; and
 - iv. A schedule for performance of specific tasks.
 - b. In the event that additional sampling locations, testing, and analyses are utilized or required, Respondents shall submit to EPA an addendum to the QAPP for approval by EPA.
 - c. In order to provide quality assurance and maintain quality control with respect to samples to be collected, Respondents shall ensure the following:
 - i. Quality assurance and chain-of-custody procedures shall be performed in accordance with standard EPA protocol and guidance, including the guidance provided in the EPA Region 2 Quality Assurance Homepage, and the guidelines set forth in this Order.
 - ii. The laboratory to be used must be specified. If the laboratory participates in the Contract Laboratory Program (“CLP”) for the analysis to be performed for this investigation, then project-specific Performance Evaluation (“PE”) samples will not be required, as CLP laboratories run EPA PEs on a quarterly basis. If the proposed laboratory does not participate in the CLP for the analyses required, PE samples must be analyzed to demonstrate the

capability to conduct the required analysis prior to being approved for use. Once a non-CLP laboratory has been selected, the laboratory should submit a copy of their Laboratory Quality Assurance Program Plan ("LQAPP") to EPA for review and approval.

For any analytical work performed, including that done in a fixed laboratory, in a mobile laboratory, or in on-site screening analyses, Respondents must submit to EPA a Non-CLP Superfund Analytical Services Tracking System form for each laboratory utilized during a sampling event, within thirty (30) days after acceptance of the analytical results. Upon completion, such documents shall be submitted to the EPA Project Coordinator, with a copy of the form and transmittal letter to:

Regional Sample Control Center Coordinator
U.S. EPA Region 2
Division of Environmental Science & Assessment
2890 Woodbridge Avenue, Bldg. 209, MS-215
Edison, NJ 08837

- iii. The laboratory utilized for analyses of samples must perform all analyses according to accepted EPA methods as documented in the Contract Lab Program Statement of Work for Organic Analysis, (OLM04.2) or the latest revision, and the Contract Lab Program Statement of Work for Inorganic Analysis, (ILM05.2) or the latest revision, or other EPA approved methods.
- iv. Unless indicated otherwise in the approved QAPP, within 60 days of receipt from the laboratory, all data shall be validated.
- v. Submission of the validation package (checklist, report and Form Is containing the final data) to EPA, prepared in accordance with the provisions of Subparagraph vi., below.
- vi. Assurance that all analytical data that are validated as required by the QAPP are validated according to the procedures stated in the EPA Region II Contract Lab Program Organics Data Review and Preliminary Review (SOP #HW-6, Revision 12), dated March 2001, or the latest revision, and the "Evaluation of Metals Data for the Contract Laboratory Program (SOP #HW-2, Revision 11), dated January 1992 or the latest revision, or EPA-approved equivalent procedures. Region 2 Standard Operating Procedures are available at: <http://www.epa.gov/region02/desa/hsw/sops.htm>

- vii. Unless indicated otherwise in the QAPP, Respondents shall require deliverables equivalent to CLP data packages from the laboratory for analytical data. Upon EPA's request, Respondents shall submit to EPA the full documentation (including raw data) for this analytical data. EPA reserves the right to perform an independent data validation, data validation check, or qualification check on generated data.
 - viii. Respondents shall insert a provision in their contract(s) with the laboratory utilized for analyses of samples, which will require granting access to EPA personnel and authorized representatives of the EPA for the purpose of ensuring the accuracy of laboratory results related to the Site.
- 3. A Health and Safety Plan ("HSP"), which shall conform to 29 CFR §1910.120, OSHA Hazardous Waste Operations Standards, and the EPA guidance document, Standard Operating Safety Guidelines (OSWER, 1988).
- 4. A Data Management Plan ("DMP"), shall identify the protocol for managing databases and geographic information systems ("GIS") data, and shall assimilate and integrate the historical data and field data. The database system shall comply with the EPA standard-electronic format, following the instruction provided in the "Electronic Data Deliverable Specification Manual, Version 2.1" (or the latest revision), unless an alternate format is proposed by the Respondents' and accepted by the EPA.
- I. Following approval or modification by EPA in accordance with this Settlement Agreement, the RI/FS Work Plan shall be deemed to be incorporated into this Settlement Agreement by reference.

III. TASK II - STAKEHOLDER INVOLVEMENT

EPA will develop a Site-specific Stakeholder Involvement Plan and make revisions to this plan as necessary and in accordance with EPA guidance and the NCP. To the extent requested by EPA, Respondents shall provide information relating to the work required hereunder to the public. As requested by EPA, Respondents shall participate in the preparation of appropriate information disseminated to the public; participate in public meetings, which may be held or sponsored by EPA, to explain activities at or concerning the Site; and procure a suitable location for public meetings, as needed. Respondents should communicate their activities with the Meadowlands Environmental Research Institute (MERI) as necessary to minimize redundancies in the compilation of information and facilitate sharing of information on activities in the BCSA that can influence the Respondents preparation of the RI/FS and subsequent remedy.

IV. TASK III - SITE CHARACTERIZATION

Following EPA's written approval or modification of the RI/FS Work Plan, Respondents shall implement the provisions of the RI/FS Work Plan to characterize the nature, quantity, concentrations, and fate and transport of hazardous substances, pollutants, or contaminants in connection with the Site.

- A. As part of the investigations of the Site, Respondents shall perform the activities described in this task. The overall objective of site characterization is to describe areas of the Site that may pose a threat to human health or the environment. Surface and subsurface pathways of migration will be defined. Respondents shall identify the sources of contamination and define the loading of hazardous substances from the sources of contamination to the Berry's Creek waterways and marshes, including their physical and chemical constituents. The nature and extent of hazardous substances in Berry's Creek waterways and marshes will be identified also. Concentrations at the Site will be compared to background and urban reference area levels, as well as literature toxic effects levels. Using these data and information, contaminant fate and transport is then determined and projected.

The Framework Document provides additional descriptions of work elements that will be incorporated into the RI/FS. The RI for the Site will be conducted according to a schedule that will be submitted as part of the Work Plan (See Paragraph II H., above.) Site characterization activities will be conducted iteratively. The RI will be divided into three phases that will track a three year schedule of site characterization (unless the schedule is extended by the EPA) to ensure characterization of the range of conditions and to initiate long term monitoring for trend analysis. Details of the sampling program and the implementation schedule will be described in the Work Plan. Respondents shall utilize information from completed site characterization efforts to propose modifications to the work specified in the initial Work Plan, as necessary to satisfy the objectives of the RI/FS. It is anticipated that the first phase of Remedial Investigation activities will emphasize characterization of BCSA hydrodynamics, initiating routine monitoring and obtaining an assessment of the horizontal distribution of Chemicals of Potential Concern (COPCs) in surface water, sediment and biota in the primary waterways of the BCSA. The design of sampling will be based on detailed review of the earlier investigations and other Scoping Activities. The second phase is expected to be a more extensive site characterization program that will include continuation of the program initiated in year one, plus toxicity testing, sampling of the marshes and coring to establish the vertical extent of COPCs to the extent necessary to support the FS alternatives analysis, and other analyses to complete the conceptual site models, support development of models pursuant to the modeling plan, and support development of the risk assessments. The third phase is expected to continue a routine monitoring component and include sampling necessary to fill any data gaps and needs to complete the risk assessments and detailed analysis of remedial alternatives, in addition to any Treatability Studies that may be necessary. The FS will be initiated the first year and parallel the RI in an iterative manner as specified in the Tasks IV, VIII and X.

- B. During the field work phase of the RI/FS, field data are collected and analyzed to provide the information required to accomplish the objectives of the study, consistent with the QAPP and health and safety plan. Respondents shall notify EPA at least fourteen (14) days in advance of the field work regarding the planned dates for field activities, including ecological field surveys, field lay out of the sampling locations, excavation, initiating sampling, installation and calibration of equipment, and initiation of analysis and other field investigation activities, except for sampling that is to coincide with specified storm flows or storm tides. In addition to the deliverables below, Respondents shall provide a monthly progress report and participate in meetings with EPA at major milestones in the RI/FS process in accordance with Section X of the Administrative Agreement and Order.

Respondents shall provide EPA with quarterly updates of unvalidated analytical data pursuant to the QAPP, in the electronic format required by EPA. Validated analytical data shall also be provided to EPA quarterly, showing the locations, media and results, as described in the Data Management Plan. In addition, Respondents shall establish a project web site for the purpose of sharing data, reports, and other documents and information with access to material varied according to the status of material in the review and acceptance/approval process. Analytical data shall be validated within sixty (60) days of receipt of data, unless otherwise indicated in the approved QAPP. Respondents shall notify EPA in the subsequent monthly progress report of the completion of field activities.

1. Field Investigation

The field investigation includes the gathering of data to define the Site's physical and biological characteristics, sources of contamination, and the nature and extent of contamination at the Site. These activities shall be performed by the Respondent in accordance with the RI/FS Work Plan and QAPP. At a minimum, this shall address the following:

a. Implement and Document Field Support Activities

Respondents shall initiate field support activities following approval of the RI/FS Work Plan and QAPP. Field support activities may include scheduling, and procuring equipment, office space, laboratory services, and/or contractors. Respondents shall initiate time critical field support activities, such as procurement of the primary contractors needed to prepare the Work Plan and QAPP and obtaining access to the Site, prior to approval of the RI/FS Work Plan and QAPP. Respondents shall provide EPA with reasonable notice prior to initiating field support activities so that EPA may adequately schedule oversight tasks. Respondents shall also notify EPA of the completion of field support activities in the monthly progress report.

b. Investigate and Define Site Physical and Biological Characteristics

Respondents shall collect data on the physical and biological characteristics of the Site and its surrounding areas, and specific physical characteristics identified in the Work Plan. Reference areas will be identified, to the extent not already completed during the Scoping Activities, which match the BCSA watershed in size, land use, and hydrology among other parameters, to the extent practicable and applicable. This information will be ascertained through a combination of GIS information resources, physical measurements, observations, and sampling efforts and will be utilized to define potential transport pathways and human and ecological receptor populations. In defining the physical characteristics of the Site, Respondents shall also obtain sufficient engineering data for the projection of contaminant fate and transport, and development and screening of remedial action alternatives, including information to assess treatment technologies.

c. Define Potential Sources of Contamination

Based on data collected from surface water and sediment, Respondents shall identify the sources of contamination to Berry's Creek, to the extent practicable. For areas of contaminated sediment within Berry's Creek, or wetlands and tributaries adjacent to the creek not already subject to investigation under other programs, permits, orders, or agreements, the areal extent and depth of contamination shall be determined, as necessary for remedial alternatives evaluation. Physical characteristics, chemical constituents and concentrations will be determined for all known and discovered areas of contamination. Respondents shall conduct sufficient sampling to characterize the contaminant sources within the Berry's Creek Study Area to meet the DQOs in the EPA approved QAPP. For contamination originating from upland properties, Respondents shall identify whether the source is potentially still contributing contamination to Berry's Creek or adjacent wetlands and tributaries. Upland properties that are still sources of contamination to the creek will be referred by the USEPA to the appropriate agency in order to further evaluate and address the source conditions. Nothing in this Statement of Work requires characterization of the nature and extent of source conditions or contaminants in or on upland properties. Should the Respondents, through the course of this investigation, identify previously unknown sources of ongoing contamination or identify ongoing releases that were thought to have been previously mitigated, then they shall notify EPA of those sources. Respondents shall provide sufficient documentation such that EPA can refer the ongoing source to the appropriate agency to be addressed.

Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from sediment or soil),

contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies.

d. Describe the Nature and Extent of Contamination

Respondent shall gather information to describe the nature and extent of contamination during the field investigation. To describe the nature and extent of contamination, Respondents shall utilize the information on the Site's physical and biological characteristics and sources of contamination to refine conceptual site models that illustrate the relationships among sources, contaminants, and receptors in the BCSA. Respondents shall then implement an iterative monitoring program and any study program identified in the RI/FS Work Plan (which includes the QAPP) such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at the Site can be determined. In addition, Respondents shall gather data for calculations of contaminant fate and transport. This process is continued until the area and depth (as necessary for detailed remedial alternative evaluation) of contamination are known to meet DQOs in accordance with the EPA approved QAPP. The information on the nature and extent of contamination will be used to determine the level of risk presented by the Site. Respondents shall use this information to help to determine aspects of the appropriate remedial action alternatives to be evaluated.

2. Data Analysis

Evaluate Site Characteristics

Respondents shall analyze and evaluate the data to describe: (1) physical, chemical and biological characteristics at the Berry's Creek Study Area, (2) contaminant source characteristics, (3) nature and extent of contamination, (4) contaminant fate and transport and (4) bioavailability. The preceding analysis will include descriptions of the roles of salinity, dissolved oxygen, and sediment transport/deposition. Results of the Berry's Creek Study Area's physical characteristics, source characteristics, and extent of contamination analyses are utilized in the refinement of conceptual site models, analysis of contaminant fate and transport, and bioavailability assessment. The evaluation will include the actual and potential magnitude of releases from the sources, sequestration mechanisms and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants.

A modeling plan shall be submitted with the Phase 1 Report. Prior to the submission of the modeling plan, the Respondents shall present the results of any preliminary modeling conducted by the Respondents and their analysis of

modeling needs to EPA in a work session. The modeling plan shall be revised based on EPA comments. Data collected during the RI should support the development of models based on the modeling plan. Programming, including any proprietary programs, shall be made available to EPA (with no waiver of intellectual property rights) together with a sensitivity analysis. The modeling **will** be conducted by the Respondents in accordance with the approved modeling plan. EPA reserves its rights to conduct its own modeling or complete models initiated by the Respondents. If EPA conducts its own modeling efforts, it will provide to the Respondents, in writing, justification for conducting such work. Respondents shall collect and analyze the data necessary for developing, running, validating and verifying the models. All data collected under this agreement will be made available to EPA in a timely manner as it is generated during the RI.

EPA may provide modeling information for the risk assessments and alternatives analysis, to the extent EPA conducts applicable modeling. Respondents shall agree to discuss any data gaps identified by the EPA and then collect data that are necessary to complete the baseline risk assessment. (See Guidance for Data Usability in Risk Assessment - Publication # 9285.7-09A, April 1992.) Also, this evaluation shall include any information relevant to characteristics of the Site necessary for evaluation in the baseline risk assessment of the need for remedial action and for the development and evaluation of remedial alternatives. (See Risk Evaluation of Remedial Alternatives (Part C) - OSWER Directive 9285.7-01C, December 1991.) Analysis of data collected for characterization of the Site will meet the DQOs developed in the QA/QC plan (or revised during the RI).

3. Data Management Procedures

Respondents shall consistently document the quality and validity of field and laboratory data compiled during the RI.

a. Document Field Activities

Information gathered during characterization of the Site will be consistently documented and adequately recorded by Respondents in well-maintained field logs and laboratory reports. The method(s) of documentation must be specified in the work plan and QAPP. Field logs or dedicated field log-books must be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

b. Maintain Sample Management and Tracking

Respondents shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated

analytical data are reported and utilized in the evaluation of remedial alternatives. Analytical results developed under the work plan will not be included in the site characterization reports for the Site unless accompanied by, or cross-referenced to, a corresponding QA/QC report. In addition, Respondents shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

4. Phase 1 Site Characterization Report and Work Plan Addendum (Phase 1 Report)

a. Schedule

Draft Phase 1 Report

In accordance with the schedule in the approved RI/FS Work Plan, Respondents shall submit a Draft Phase 1 Site Characterization Report and Work Plan Addendum (Phase 1 Report) that details the Phase 2 field work. Within fourteen (14) days after Respondents' submittal of the Draft Phase 1 Report, Respondents, upon EPA's request, shall make a presentation to EPA and the State on the findings of the Draft Phase 1 Report and discuss EPA's and the State's preliminary comments and concerns associated with the Draft Phase 1 Report.

Final Phase 1 Report

If EPA disapproves of or requires revisions to the Draft Phase 1 Report, in whole or in part, Respondents shall amend and submit to EPA a Final Phase 1 Report that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement and Order.

- b. The Phase 1 Report will review the investigative activities that have taken place, and describe and display data from the Berry's Creek Study Area documenting the location and characteristics of surface and subsurface features and contamination at the Berry's Creek Study Area including the affected medium, location, physical state, concentration of contaminants and quantity. In addition, the location, physical condition and varying concentrations of each contaminant throughout the waterways in each portion of the BCSA and the extent of contaminant migration in surface water and sediment through the BCSA will be documented. The report will provide refined DQOs, updated conceptual site models, a screening level ecological risk assessment, and determination of chemicals of concern. The Phase 1 Report will refine the study questions, identify data gaps and will detail the proposed Phase 2 sampling program, which will collect appropriate data to evaluate remedial actions for the Site. The Phase 1 Report will include results of:

- i. Pre-RI/FS data will be reviewed to evaluate its utility in the RI/FS. Phase 1 Site Characterization data will be compared with historic data to support trend analysis, considering the data quality and other limitations of the historic data.
- ii. Historical data review, including potential upland soil sites that are contributing loads to Berry's Creek.
- iii. Low-resolution cores plus any required geotechnical and geochemical parameters.
- iv. Integrative and discrete surface water samples, storm event sampling, and water column stratification plus any field parameter measurements and geochemical parameters. Results are required from the hydrology and hydrodynamic program, including time plots for each mooring station, freshwater flow into Berry's Creek, delineation of the salt gradient, and status of the operation and maintenance schedule of tidal gates throughout the BCSA. Results should be presented in a water budget context, incorporating the preliminary water budget analysis completed as part of Scoping Activities, to identify the impact of tides on the water quality and sediment transport dynamics of Berry's Creek and its tributaries; identify loading to and from Berry's Creek and the Hackensack River; evaluate correlations between water column COPC concentrations and suspended solids; and characterize the circulation and particle residence time in various portions of the creek.
- v. Bathymetric maps and side-scan sonar mosaics, incorporating the results of the mapping work completed as part of the Scoping Activities, to identify water depth, submerged debris in waterways, and potential surface water runoff areas, incorporating the materials generated as part of the Scoping Activities. Images from the side-scan sonar will be provided along with a list of target areas for further core sampling, including debris fields and submerged obstacles. A map of sediment texture (delineated from the side-scan sonar) is required to identify potential scour and depositional areas. Core sampling will be initiated in Phase 1 to provide, in part, the basis for focusing the more detailed coring during Phase 2 and Phase 3 field work.
- vi. Biological and ecological data plus any field measurements and geochemical parameters. A graphical presentation is required for the delineation of wetlands and other ecosystems. An inventory of flora and fauna, including benthic invertebrates, will be completed to identify ecologically-relevant receptors and endangered or

threatened species (initiated as a Scoping Activity). This inventory will provide an assessment of the health of the ecosystem, evaluate flora and fauna diversity (e.g., Shanon Weiner Diversity Index values), and identify the presence of native and intrusive species. The results of historic tissue sampling for key species will be analyzed to preliminarily estimate bioavailability and bioaccumulation of contaminations.

- vii. Description of the regional groundwater flow and groundwater sampling to identify specific sources of potential concern and estimate contaminant loads from groundwater to the surface water, taking into account the tidal prism volume, other relevant factors, and the potential for significant impacts to the surface waters and sediments of the Berry's Creek waterways and marshes.
- viii. Atmospheric deposition data review to evaluate if deposition is a significant component of the conceptual site model.
- ix. Storm water runoff data to identify potential contaminant loads from soils to Berry's Creek and adjacent wetlands.
- x. Stage 1A cultural resource investigation detailing the methodology employed to conduct the investigation, presenting the results of the work, providing conclusions on the archaeological sensitivity of the various portions of the Berry's Creek Study Area, and presenting recommendations for any warranted additional investigations. If no additional investigations of all or portions of the project area are warranted, such conclusion should be clearly stated in the report.
- xi. Preliminary Interim Remedial Measure Evaluation

Respondents shall conduct an evaluation of Phase 1 data to consider if an Interim Remedial Measure ("IRM") or early action may be appropriate for a portion of the Berry's Creek Study Area. The evaluation shall identify any data or information that should be obtained during the Phase 2 site characterization to support the preparation of a Draft IRM Letter Report following Phase 2. Any data or information needs identified during the Preliminary IRM Evaluation shall be incorporated into the Phase 2 Sampling Proposal (Work Plan Addendum).

5. Fate and Transport Assessment

The Respondents will evaluate fate and transport and biouptake for the Berry's Creek Study Area. All fate and transport modeling shall be completed consistent with the modeling plan (Section IV.B.2., second paragraph).

6. Phase 2 Sampling Proposal (Work Plan Addendum)

The Respondents shall prepare a Work Plan addendum as part of the Phase 1 report. The second phase will be a more extensive site characterization program that will include continuation of the program initiated in year one, plus toxicity testing, sampling of the marshes and sediment coring to establish vertical extent of COPCs to the extent necessary to support the FS alternatives analysis, and other analyses to complete the conceptual site models and support development of the risk assessments. In addition, data gaps identified in the Phase 1 analysis shall be addressed with proposals to provide further for the identified data needs and fill data gaps. Sampling can include methods previously approved for Phase 1 and new methods to address conditions identified during Phase 1.

V. TASK IV – FEASIBILITY STUDY - IDENTIFICATION OF CANDIDATE TECHNOLOGIES AND POTENTIAL REMEDIAL ALTERNATIVES

The Feasibility Study will be completed in 3 phases to correspond with the phased approach to the RI. The first phase will be initiated at the end of the first year of field work and will include the identification of candidate technologies and general remedial alternatives. In the second phase (Task VIII), following the second year of field work, the data from each of the major segments of the study area will be evaluated to identify the range of alternatives that may be well suited to the conditions that dominate a particular study segment. Based on that analysis, data needs will be identified to support the completion of the detailed analysis of alternatives, including any Treatability Studies. Following the third year of site characterization and potential Treatability Studies, the third phase will be the preparation of the Feasibility Study Report, which will be primarily focused on the completion of the detailed analysis of alternatives.

Schedule: An Identification of Candidate Technologies Memorandum shall be submitted by Respondents within ninety (90) days of Respondents' submission to the EPA of the last set of validated analytical results from the Phase 1 field work. The candidate technologies identified shall include innovative treatment technologies (as defined in the RI/FS and sediment guidance) where appropriate. The listing of candidate technologies will cover the range of technologies required for alternatives analysis (Task VIII) and shall be presented in the context of potential remedial alternatives for each segment of the BCSA. In addition, data needs to support the subsequent development and screening alternatives shall be identified for use in designing the Phase 2 and 3 site characterization work. If EPA disapproves or requires revisions to the technical memorandum identifying candidate technologies and potential remedial alternatives, in whole or in part, Respondents shall amend and submit to EPA a revised technical memorandum identifying candidate technologies which is responsive to the EPA comments in accordance with Section XI of the Settlement Agreement and Order.

VI. TASK V – PHASE 2 SITE CHARACTERIZATION REPORT AND WORK PLAN ADDENDUM (Phase 2 Report)

The Phase 2 Site Characterization Report and Work Plan Addendum (Phase 2 Report) will include the presentation of the more extensive site characterization program of the second year of field work, which will include continuation of the program initiated in year one to establish trends in concentration data, plus the results of: toxicity testing, sampling of the marshes and coring to establish vertical extent of COPCs to the extent necessary to support the FS alternatives analysis, as well as other analyses to complete the conceptual site models and support development of the risk assessments.

Graphical presentations of data from low-resolution and high-resolution cores, plus any required geotechnical and geochemical parameters, will be provided for transects across the waterways and across the marshes. Data from high-resolution cores will be used to establish a geochronological history of chemicals and other stressors, estimate sedimentation rates and mixing layers, identify loading to Berry's Creek and Hackensack River, and identify potential sources of contamination. In addition, concurrently, the work on the human health risk assessment and ecological risk assessments will be advanced to subsequent management decision points.

The Respondents shall prepare a Work Plan addendum as part of the Phase 2 report. The third phase will continue a routine monitoring component and include sampling necessary fill any data gaps and needs to complete the risk assessments, modeling, and detailed analysis of remedial alternatives, in addition to any Treatability Studies that may be necessary. Data gaps identified in the Phase 2 analysis shall be addressed with proposals to address the identified data needs and fill data gaps. Sampling can include methods previously approved for Phase 1 and 2 and new methods to address conditions identified during Phase 2. Any QAPP revisions will be addressed in the addendum accordingly.

Upon EPA's request, the Respondents shall make a presentation to EPA and the State on the findings of the Draft Phase 2 Report and discuss EPA's and the State's preliminary comments and concerns associated with the Draft Phase 2 Report. The Work Plan Addendum will identify field investigations that are needed to fill data gaps and data needs related to the BCSA study area questions and FS data needs. In addition, the field work will include continuation of the program to establish trends in the concentration data.

Interim Remedial Measure Letter Report

Respondents shall prepare a draft letter report that will summarize relevant Phase 1 and Phase 2 data and evaluate whether an Interim Remedial Measure ("IRM") or early action is appropriate for the Berry's Creek Study Area. The analysis shall take into account the risk assessments completed up to the time of the IRM evaluation. If appropriate, the report will present potential remedial options and plans to reduce human health and ecological risks.

Respondents shall submit a Draft IRM Letter Report thirty (30) days after submitting the Draft Phase 2 Report. If EPA disapproves or requires revisions to the Draft IRM Letter Report, in

whole or in part, Respondents shall amend and submit to EPA a Final IRM Letter Report that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement and Order.

VII. TASK VI - BASELINE RISK ASSESSMENT

Respondents shall prepare a Baseline Risk Assessment for the Site which shall be incorporated by the Respondents into the RI. Respondents shall provide EPA with the following deliverables:

A. Baseline Human Health Risk Assessment (BHHRA)

1. Potential cancer risks and non-cancer hazards to human health shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, the RI/FS Guidance, "Land Use in the CERCLA Remedy Selection Process" (OSWER Directive No. 9355.7-04) and the definitions and provisions of "Risk Assessment Guidance for Superfund (RAGS)," Volume 1, "Human Health Evaluation Manual," (December 1989) (EPA/540/1-89/002). Other EPA guidance to be used in the development of risk assessments is provided in Appendix 1A.
2. Representative contaminants and associated concentrations in media including sediment, surface water and biota for the BHHRA shall be determined utilizing all currently available media-specific analytical data generated during the RI/FS.
3. Memorandum on Exposure Scenarios and Assumptions. Within ninety (90) days after receiving written EPA approval of the RI/FS Work Plan, Respondents shall submit a memorandum describing the exposure scenarios and assumptions, taking into account the present and reasonably anticipated future land use of the Site. The memorandum should include appropriate text describing the preliminary conceptual site models and exposure routes of concern for the Site, and include a completed RAGS Part D Table 1 and the process to develop any site-specific exposure parameters that may be warranted. The RAGS Part D Table 1 shall describe the pathways that will be evaluated in the BHHRA, the rationale for their selection, and a description of those pathways that will not be evaluated. In addition, the Memorandum shall include a completed RAGS Part D Table 4 describing the exposure pathway parameters with appropriate references to EPA's 1991 Standard Default Assumptions and updated guidance developed by EPA. If EPA disapproves, or requires revisions to, the memorandum, in whole or in part, such disapproval or required revisions shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable. Respondents shall amend and submit to EPA a revised memorandum that is responsive to the EPA comments, within thirty (30) days of receiving EPA's comments.

4. Pathway Analysis Report (“PAR”). Respondents shall prepare and submit a PAR within sixty (60) days after receipt of the last set of validated data from the Phase 1 site characterization. An updated PAR will be prepared and submitted within sixty (60) days after receipt of the last set of validated data from the Phase 2 site characterization. The PAR shall be developed in accordance with OSWER Directive 9285.7-01D-1 dated December 17, 1997 (or more recent version), entitled, *Risk Assessment Guidelines for Superfund Part D* and other appropriate guidance in Appendix 1A and updated thereto. The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Site will be assessed. The PAR will build on the Memorandum on Exposure Scenarios and Assumptions (see A.3 above) describing the risk assessment process and how the risk assessment will be prepared. The PAR shall include completed RAGS Part D Tables 2, 3, 5, and 6 as described below. Following completion of Phase 3, the PAR will be updated within sixty (60) days after receipt of the last validated data. The updated PAR must be reviewed and approved by EPA prior to the submission of the draft BHHRA.
- a. Chemicals of Concern (COC). The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Berry’s Creek Study Area will be evaluated.
- i. Respondents shall list the hazardous substances present in all sampled media (e.g., surface water, sediment, etc.) and COPCs as described in RAGS Part A.
- ii. Selection of COCs. Representative contaminants and associated concentrations in sample media for the major BCSA segments for the PAR shall be determined utilizing all currently available media-specific validated analytical data generated during the RI/FS. The selection of COCs shall follow RAGS Part A and before chemicals are deleted as COCs they shall be evaluated against the residential PRGs from Region IX. The COCs shall be presented in completed RAGS Part D Table 2 format.
- iii. Focused risk assessment of the primary exposure pathways and using the historic data and Phase 1 sampling data will be used to support a determination of the appropriate analytical parameters for Phase 2 and Phase 3 sampling in each of the major segments of the BCSA.
- b. Media Specific Exposure Point Concentrations. Using the chemicals selected in Table 2, this Table shall summarize the Exposure Point Concentrations for all COCs for the various media. The calculation of the Exposure Point Concentration shall follow the 1992 Guidance Document on the calculation of the 95% Upper Confidence Limit (UCL) on the Mean. In those cases where the 95% UCL of the mean exceeds the maximum concentration, the maximum shall be used as the EPC. In

addition, the central tendency exposure (CTE) shall be calculated and presented.

c. Toxicological Information.

This section of the PAR shall provide the toxicological data (e.g., Cancer Slope Factors, Reference Doses, Reference Concentrations, Weight of Evidence for Carcinogens, and adjusted dermal toxicological factors where appropriate) for the chemicals of concern. The toxicological data shall be presented in completed RAGS Part D Tables 5 and 6. The sources of data in order of priority are: EPA's Integrated Risk Information System (IRIS), contact with EPA's National Center for Environmental Assessment and Health Effects Assessment Summary Tables (HEAST)-1997. To facilitate a timely completion of the PAR, the Respondents shall submit a list of chemicals for which IRIS values are not available to EPA as soon as identified thus allowing EPA to facilitate obtaining this information from EPA's National Center for Environmental Assessment.

If EPA disapproves, or requires revisions to the PAR, in whole or in part, Respondents shall amend and submit to EPA a revised PAR that is responsive to EPA's written comments within thirty (30) days of receipt of EPA's comments.

d. As part of the IRM evaluation, the primary exposure pathways and COPCs will be evaluated to determine the magnitude of the risks associated with a particular condition and support the development of remedial action objectives for any action under consideration.

5. Baseline Human Health Risk Assessment of the RI Report. Within ninety (90) days of the completion of the Phase 3 data collection and EPA's approval of the PAR, whichever is later, Respondents shall submit to EPA a Draft BHHRA for inclusion in the RI. The submittal shall include completed RAGS Part D Tables 7 through 10 summarizing the calculated cancer risks and non-cancer hazards and appropriate text in the risk characterization with a discussion of uncertainties and critical assumptions (e.g., background concentrations and conditions). Respondents shall perform the BHHRA in accordance with the approach and parameters described in the approved Memorandum of Exposure Scenarios and Assumptions and the PAR describe above. Text and tables from these previously approved reports shall be included in the appropriate sections of the BHHRA.

If EPA disapproves of or requires revisions to the Draft BHHRA, in whole or in part, Respondents shall amend and submit to EPA a Final BHHRA that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

B. Baseline Ecological Risk Assessment

1. As part of the Phase 1 Report, Respondents shall submit a Screening-Level Ecological Risk Assessment (SLERA) in accordance with current Superfund ecological risk assessment guidance (Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments [ERAGS], USEPA, 1997 [EPA/540-R-97-006]). EPA expects that the SLERA will be a short and qualitative assessment for the most part, based on the assumption stated below, that a full Baseline Ecological Risk Assessment will be required.

If EPA disapproves of or requires revisions to the Draft SLERA, in whole or in part, Respondents shall amend and submit to EPA a Final SLERA that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

2. Based on the existing data, it is assumed that a full Baseline Ecological Risk Assessment (BERA) will be required. Therefore, Respondents shall include in the Phase 1 Report a Scope of Work outlining the steps and data necessary to perform the BERA, including any amendments to the RI/FS Work Plan required to collect additional relevant data. If EPA disapproves, or requires revisions to, the BERA Scope of Work, in whole or in part, Respondents shall amend and submit to EPA a revised BERA Scope of Work that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement. The BERA Scope of Work shall identify any RI/FS Work Plan amendments or addenda, including establishment of a schedule for review and approval of additional field work.
3. Respondents shall prepare and submit an Ecological Exposure Assessment Technical Memorandum within sixty (60) days after receipt of the last set of validated data from the Phase 2 site characterization. The Technical Memorandum shall present updated conceptual site models and evaluation of the exposure pathways specific in the various segments of the BCSA, including consideration of any differences in the measurement and assessment endpoints that are warranted across the Site. Data gaps shall be identified for incorporation into the Phase 3 site characterization.
4. Within ninety (90) days of the submission of the Phase 3 Report, Respondents shall submit a draft Baseline Ecological Assessment Report to EPA. Actual and potential ecological risks shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments, (1997) (EPA/540-R-97-006), ERAGS, dated June 5, 1997 (or most recent guidance).

If EPA disapproves of or requires revisions to the Draft BERA, in whole or in part, Respondents shall amend and submit to EPA a Final BERA that is

responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

Respondents shall evaluate and assess the risk to the environment posed by site contaminants. As part of this subtask, Respondents shall perform the following activities:

Draft Baseline Ecological Risk Assessment Report. Respondent shall prepare a draft Ecological Risk Assessment Report that addresses the following:

- a. Hazard Identification (sources). Respondents shall review available information on the hazardous substances present at the site and identify the major contaminants of concern.
- b. Dose-Response Assessment. Respondents shall identify and select contaminants of concern based on their intrinsic toxicological properties.
- c. Characterization of the Berry's Creek Study Area and Potential Receptors. Respondents shall identify and characterize environmental exposure pathways for the major segments of the BCSA.
- d. Select Chemicals, Ecologically-relevant Receptor Species, and Endpoints. In preparing the assessment, the Respondent shall select representative chemicals, ecologically-relevant species (several species which are present in BCSA (and urban reference areas) and ecologically-relevant based on dominance, keystone species, ecotypes, and sensitive to environmental contaminants), and endpoints on which to concentrate.
- e. Exposure Assessment. The exposure assessment shall identify the magnitude of actual or potential environmental exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, Respondents shall develop reasonable maximum estimates and the central tendency of exposure for both current land use/hydrology/sediment transport conditions and potential land use/hydrology/sediment transport conditions at the Site.
- f. Toxicity Assessment/Ecological Effects Assessment. The toxicity and ecological effects assessment shall address the types of adverse environmental effects associated with chemical exposures, the relationships between magnitude of exposures and adverse effects, and the related uncertainties for contaminant toxicity (e.g., weight of evidence for a chemical's carcinogenicity).

- g. Risk Characterization. During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment with measured levels of contaminant exposure levels or the levels predicted through environmental fate and transport modeling, as appropriate. These comparisons shall determine whether concentrations of contaminants at or near the Site are affecting or could potentially affect ecological receptors at a community or population level (or, for endangered and threatened species, at an individual level). The risk characterization shall use a weight of evidence approach to assess population-level risks and risks to individuals of special protection species associated with Site contaminants.
- h. Respondent shall consider additional studies in the laboratory or field-designed to refine estimates of population-level risks for key receptors, for which uncertainties are relatively large. Studies shall be proposed to EPA for review and approval in accordance with the Settlement Agreement.
- i. Identification of Limitations/ Uncertainties. Respondents shall identify critical assumptions (e.g., background/reference area concentrations and conditions) and uncertainties in the report.
- j. Conceptual Site Models. Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, Respondents shall develop conceptual models of the Site.

VIII. TASK VII – PHASE 3 REPORT

Respondents shall prepare a Phase 3 Report for the Site that accurately establishes the Site's characteristics, such as the contaminated media, extent of contamination, and the physical boundaries of the contamination, to support evaluation of remedial alternatives. This report shall be a stand alone document that summarizes results of all field activities to characterize the Site, sources of contamination, and the fate and transport of contaminants. Pursuant to this objective, Respondents shall obtain the detailed data necessary to determine the key contaminants' movement and extent of contamination. The key contaminants must be selected based on persistence, mobility, and bioavailability in the environment and their relative degree of risk. Respondents shall use existing standards and guidelines such as surface water standards, water quality criteria, and other criteria accepted by EPA as appropriate for the situation that will be used to evaluate effects on human and ecological receptors. Within fourteen (14) days after Respondents' submittal of the Draft Phase 3 Report, Respondents, upon EPA's request, shall make a presentation to EPA and the State on the findings of the Draft Phase 3 Report.

The Phase 3 Report shall be the equivalent of a Remedial Investigation (RI) Report, although several components of an RI will be broken out and submitted as separate reports, (*i.e.*, the Modeling Report and the Risk Assessment Reports). The Phase 3 Report shall be written in accordance with the Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA, OSWER Directive 9355.3-01, October 1988, Interim Final (or latest revision) and

Guidance for Data Usability in Risk Assessment, (EPA/540/G-90/008), September 1990 (or latest revision). Respondents shall refer to the RI/FS Guidance for an outline of the report format and contents.

A. Draft Phase 3 Report

In accordance with the schedule in the approved RI/FS Work Plan, Respondents shall submit a draft Phase 3 (RI) Report.

B. Final Phase 3 Report

If EPA disapproves of or requires revisions to the Draft Phase 3 Report, in whole or in part, Respondents shall amend and submit to EPA a Final Phase 3 Report that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

IX. TASK VIII - DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

Based on the results of the Task IV analysis of technologies, identification of potential remedial alternatives and the site characterization available at the end of Phase 2, and taking into account any actions being developed or undertaken based on the findings of the IRM Letter Report, Respondents shall begin to develop and evaluate a range of appropriate risk management options that at a minimum ensure protection of human health and the environment. This range of alternatives should include options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; options including monitored natural recovery; and a no-action alternative. In preparing the range of alternatives, the Respondents shall supplement the RI/FS guidance with materials such as the "Contaminated Sediment Remediation Guidance for Hazardous Waste Sites", (U.S. EPA, Office of Emergency and Remedial Response, December 2005). To the extent that portions of the BCSA are relatively distinct, the combinations of remedial alternatives will vary among study segments. The following activities will be performed as a function of the development and screening of remedial alternatives.

A. Development and Screening of Remedial Alternatives

1. Develop General Response Action

Respondent shall develop general response actions for each medium of interest defining containment, treatment, excavation, dredging, monitored natural recovery or other actions, singly or in combination or in a phased sequence to satisfy the remedial action objectives (RAOs). The RAOs will be developed to take into account relative risks of COCs and other stressors, as well as ensure that

cleanup objectives for sediment are clearly tied to overall risk management goals.

2. Identify Areas or Volumes of Media

Respondent shall identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical, physical and biological characterization of the Berry's Creek Study Area will also be taken into account.

3. Assemble and Document Alternatives

Respondents shall assemble selected representative technologies into alternatives for each affected medium, study area segment, or operable unit.

Together, all of the alternatives will represent a range of treatment and containment and monitoring combinations that will address either the Site or the operable unit(s) as a whole. A summary of the assembled alternatives and their related action-specific ARARS will be prepared by Respondents for inclusion in a technical memorandum.

The reasons for eliminating alternatives during the preliminary screening process must be specified.

4. Refine Alternatives

Respondents shall refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. Preliminary remediation goals (PRGs) for each chemical (or combination of chemicals, which may be presented as an index or combined measure) in each medium will also be modified as necessary to incorporate any new risk assessment information presented in the baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

5. Conduct and Document Screening Evaluation of Each Alternative

Respondents may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment and monitoring alternatives that was initially developed. The range of remaining alternatives will

include options that use treatment technologies and permanent solutions to the maximum extent practicable. In addition, in recognition of the large size of the BCSA, the multiple current and past sources of stressors, and likelihood of a long period of remedy implementation and monitoring, the Respondents will develop an adaptive site management approach to the remedy that incorporates a long term monitoring program to provide a continuing measure of the performance of the remedy.

B. Development and Screening of Alternatives Deliverables

Within thirty (30) days after EPA's approval of the Phase 2 Report, Respondents shall: (1) upon EPA's request, make a presentation to EPA and the State identifying the remedial action objectives and summarizing the development and preliminary screening of remedial alternatives and any recommendations regarding Treatability Studies, and (2) prepare and submit a Development and Screening of Remedial Alternatives technical memorandum summarizing the work performed in, and the results of, each task above, including an alternatives array summary. The memorandum shall also summarize the reasoning employed in screening, arraying alternatives that remain after screening, and identifying the action-specific ARARs for the alternatives that remain after screening. If required by EPA's comments, these remaining alternatives will be modified by the Respondents to assure that a complete and appropriate range of viable alternatives are identified and considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process and any decision on Treatability Studies.

C. Detailed Analysis of Remedial Alternatives

Upon EPA's approval of the Baseline Risk Assessment (following completion of Phase 3 Site Characterization), or after EPA's approval of Respondents' Treatability Study Evaluation report (if undertaken), whichever is later, Respondents shall initiate the detailed analysis of remedial alternatives to provide EPA with the information needed to allow for the selection of a remedy for the Berry's Creek Study Area/the Site.

1. Detailed Analysis of Alternatives

Respondents shall conduct a detailed analysis of alternatives which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis of all options using the same evaluation criteria as a basis for comparison.

2. Apply nine criteria and document analysis

Respondents shall apply the first seven of the nine evaluation criteria described in the National Contingency Plan (NCP), 40 CFR Part 300, to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARS; will be cost-effective; will utilize permanent

solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The nine evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) state (or support agency) acceptance; and (9) community acceptance. Criteria 8 and 9 will be considered by EPA after the RI/FS Report and the Proposed Plan have been released to the general public for comment.

For each alternative, Respondents should provide: (1) a description of the alternative that outlines the environmental management strategy involved, including any adaptive management/monitoring sequences, and identifies the key ARARs associated with each alternative, and (2) a discussion of the individual criterion assessment.

3. Compare Alternatives and Document the Comparison of Alternatives

Respondents shall perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the evaluation criteria as a basis of comparison. Identification and selection of the preferred alternatives are reserved by EPA. Respondents shall present the results of the comparative analysis in a work session with EPA.

4. Detailed Analysis Deliverables

Within thirty (30) days of the Respondents' notification of EPA of the completion of the detailed analysis, Respondents shall upon EPA's request, make a presentation to EPA and the State identifying the remedial action objectives and summarizing the detailed analysis of remedial alternatives. Respondents shall submit a draft FS report to EPA for review and approval as provided in Task X, below. Once EPA's comments have been addressed by the Respondents to EPA's satisfaction, the final FS report may be bound with the final RI report.

X. TASK IX - TREATABILITY STUDIES

Treatability testing will be performed by the Respondents, based on the Respondents review of FS data needs or at EPA's request, to assist in the detailed analysis of alternatives. In addition, if applicable, testing results and operating conditions will be used in the detailed design of the selected remedial technology. The following activities will be performed by the Respondents.

A. Conduct Literature Survey and Determine the Need For Treatability Testing

Respondents shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance ("O&M")

requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated for this Site on the basis of available information, treatability testing will be conducted. Where it is determined by EPA that treatability testing is required, unless the Respondents can demonstrate to EPA's satisfaction that they are not needed, the Respondents shall submit a Statement of Work to EPA outlining the steps and data necessary to evaluate and initiate the treatability testing program.

B. Evaluate Treatability Studies

Once a decision has been made to perform treatability studies, Respondents and EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing should be made as early in the process as possible to minimize potential delays of the FS. To assure that a treatability testing program is completed on time, and with accurate results, Respondents shall either submit a separate treatability testing work plan or an amendment to the original site work plan for the Site for EPA review and approval.

C. Treatability Testing and Deliverables

The deliverables that will be required if treatability testing is conducted, in addition to the memorandum identifying candidate technologies, shall include a treatability testing statement of work, a work plan, a sampling and analysis plan, and a final treatability evaluation report. EPA may also require a treatability study health and safety plan, where appropriate.

If EPA determines that treatability testing is required and so notifies Respondents in writing, Respondents shall, within twenty-one (21) days thereafter, submit to EPA a Treatability Testing Statement of Work.

D. Treatability Testing Work Plan

Within thirty (30) days of written EPA approval of the Treatability Testing Statement of Work, Respondents shall submit a draft Treatability Testing Work Plan, including a schedule. If EPA disapproves or requires revisions to the Draft Treatability Testing Work Plan, in whole or in part, Respondents shall amend and submit to EPA a Final Treatability Testing Work Plan that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

Respondents shall prepare a Treatability Testing Work Plan or amendment to the original site Work Plan for the Site for EPA review and approval describing the background of the Site, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for treatability testing should be documented as well. If pilot scale treatability

testing is to be performed, the Pilot-scale Work Plan will describe pilot study design and start-up, pilot study operation and maintenance procedures, operating conditions to be tested, a sampling plan to determine pilot study performance, and a detailed health and safety plan. If testing is to be performed off-site for the Site, Respondents shall address all necessary permitting requirements to the satisfaction of appropriate authorities.

E. Treatability Study QAPP

If the original QAPP is not adequate for defining the activities to be performed during the treatability test, a separate Treatability Testing QAPP or amendment to the original QAPP for the Site will be prepared by the Respondents for EPA review and approval. Task 1 of this Statement of Work provides additional information on the requirements of the QAPP.

Within thirty (30) days of the identification by EPA of the need for a separate or revised QAPP, Respondents shall submit to EPA a revised QAPP, as appropriate. If EPA disapproves of or requires revisions to the Draft Treatability Testing QAPP, in whole or in part, Respondents shall amend and submit to EPA a Final Treatability Testing QAPP that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

F. Treatability Study Health and Safety Plan

If the original Health and Safety Plan is not adequate for defining the activities to be performed during the treatment tests, a separate or amended HSP will be developed by the Respondents. Task 1 of this statement of work provides additional information on the requirements of the HSP. EPA does not "approve" the treatability study HSP.

G. Treatability Study Evaluation Report

Respondents shall submit a Treatability Study Evaluation Report (TSER) to EPA. If EPA disapproves of or requires revisions to the Draft Treatability Study Evaluation Report, in whole or in part, Respondents shall amend and submit to EPA a Final Treatability Study Evaluation Report that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.

Following completion of treatability testing, the Respondents shall analyze and interpret the testing results in a TSER to EPA. Depending on the sequences of activities, this report may be a part of the RI/FS report or a separate deliverable. The report will evaluate each technology's effectiveness, implementability, cost and actual results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation or application of the technology.

XI. TASK X – FEASIBILITY STUDY REPORT

- A. Respondents shall prepare a Feasibility Study Report, consisting of a detailed analysis of alternatives and a cost-effectiveness analysis, in accordance with the National Contingency Plan (NCP), 40 CFR Part 300, as well as the most recent guidance. Within thirty (30) days of EPA's acceptance of the Task VIII C. 4 presentation to EPA, Respondents shall submit to EPA a Draft FS report which reflects the findings in the approved Baseline Risk Assessment and subsequent risk analysis of remedial alternatives. Respondents shall refer to the RI/FS Work Plan and the RI/FS Guidance and the SOW for report content and format. Within fourteen (14) days of submitting the draft FS report, unless extended by EPA, Respondents shall make a presentation to EPA and the State at which Respondents shall summarize the findings of the draft FS report and discuss EPA's and the State's preliminary comments and concerns associated with the draft FS report. If EPA disapproves of or requires revisions to the Draft Feasibility Study Report, in whole or in part, Respondents shall amend and submit to EPA a Final Feasibility Study Report that is responsive to EPA's written comments in accordance with Section XI of the Settlement Agreement.
- B. Respondents shall prepare a draft FS report for EPA review and comment. The FS report shall contain the following:
1. Summarize Feasibility Study objectives
 2. Summarize remedial action objectives
 3. Articulate general response actions
 4. Identification and screening of remedial technologies
 5. Remedial alternatives description
 6. Detailed analysis of remedial alternatives
 7. Summary and conclusions

Respondents' technical feasibility considerations shall include the careful study of any problems that may prevent a remedial alternative from mitigating site problems. Therefore, the site characteristics from the RI must be kept in mind as the technical feasibility of the alternative is studied. Specific items to be addressed are monitoring to support decision points, reliability (operation over time), safety, operation and maintenance, ease with which the alternative can be implemented, and time needed for implementation.

ATTACHMENT A

REFERENCES FOR CITATION

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

The National Hazardous Substance and Oil Pollution Contingency Plan, 40 CFR 300 *et seq.*

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01

“Contaminated Sediment Remediation Guidance for Hazardous Waste Sites,” U.S. EPA, Office of Solid Waste and Emergency Response, December 2005, OSWER Directive No. 9355.0-85

Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies, U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies, U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.3.

A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

EPA NEIC Policies and Procedures Manual, May 1978, revised November 1984, EPA-330/9-78-001-R.

Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

“Uniform Federal Policy for Implementing Quality Systems (UFP-QS),” EPA-505-F-03-001, March 2005

“Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP),” Parts 1, 2 and 3, EPA-505-B-04-900A, B and C, March 2005

Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.

EPA Requirements for QAPPs for Environmental Data Operations, U.S. EPA, Office of Emergency and Remedial Response, QA/R-5, October 1998.

Interim Guidelines and Specifications for Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

Users Guide to the EPA Contract Laboratory, U.S. EPA, Sample Management Office, August 1982.

Interim Guidance with Applicable or Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.

Draft Guidance on Superfund Decision Documents, U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.-02

Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A), EPA/540/1-89/002

Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part B), EPA/540/R-92/003.

Risk Assessment Guidance for Superfund - Volume II Environmental Evaluation Manual, March 1989, EPA/540/1-89/001.

Guidance for Data Useability in Risk Assessment, October, 1990, EPA/540/G-90/008.

Performance of Risk Assessments in Remedial Investigation/ Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs), August 28, 1990, OSWER Directive No.9835.15.

Risk Evaluation of Remedial Alternatives (Part C), December 1991, OSWER Directive 9285.7-01C.

Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, April 22, 1991, OSWER Directive No. 9355.0-30.

Supplemental Guidance to RAGS: Calculating the Concentration Term, May 1992, OSWER Directive 9285.7-081.

Health and Safety Requirements Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

Interim Guidance on Administrative Records for Selection of CERCLA Response Actions, U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

Community Relations in Superfund: A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.03B.

Community Relations During Enforcement Activities And Development of the Administrative Record, U.S. EPA, Office of Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1a.

HUMAN HEALTH RISK ASSESSMENT GUIDANCE DOCUMENTS

Superfund Risk Assessment Guidance

USEPA, 1989, Risk Assessment Guidance for Superfund (RAGS); Volume I Human Health Evaluation Manual Part A. OERR. EPA/540/1-89/002. Available at:
<http://www.epa.gov/superfund/programs/risk/ragsa/index.htm>

USEPA, 1990, Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, (Part B, Development of Risk-Based Preliminary Remediation Goals) OERR, EPA/540/R-92/003. Available at:
www.epa.gov/superfund/programs/risk/ragsb/index.htm

USEPA, 1991. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive 9285.7-01C, December 1991. Available at:
www.epa.gov/superfund/programs/risk/ragsc/index.htm

USEPA, 1995. Land Use in CERCLA Remedy Selection Process. OSWER Directive No. 9355.7-04.

USEPA, 1996. Revised Policy on Performance of Risk Assessments During Remedial Investigation/Feasibility Studies (RI/FS) Conducted by Potentially Responsible Parties, OSWER Directive No. 9340.1-02 mistakenly numbered 9835.15c.

USEPA, 1997. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, Part D., OERR, Interim Publication No. 9285.7-01D. Available at:
www.epa.gov/superfund/programs/risk/ragsd/index.htm

USEPA, 1999. Risk Assessment Guidance for Superfund (RAGS). Volume I, Community Involvement in Superfund Risk Assessments. OSWER 9285.7-01, EPA540-R-98-042, PB-99-96303, March 1999. Available at: www.epa.gov/superfund/programs/risk/ragsa/c1_ra.pdf.

USEPA, 2002. Role of Background in CERCLA Cleanup Program. OSWER Directive No. 9285.6-07P.

Exposure Factors

USEPA, 1991, RAGS Volume I: Human Health Evaluation Manual Supplemental Guidance. Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.

USEPA, 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. OSWER 9285.7-081. May 1992.

USEPA, 1997. Exposure Factors Handbook - Final, Office of Health and Environmental Assessment, Washington, D.C. Available at: www.epa.gov/ncea/exposfac.htm.

USEPA, 2007. Guidance for Evaluating the Oral Bioavailability of Metals in Soils for Use in Human Health Risk Assessment. OSWER 9285.7-80.
http://www.epa.gov/superfund/health/contaminants/bioavailability/bio_guidance.pdf

Dermal Exposure

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications. OSWER. EPA/600/8-91/011B. January. Available at: <http://www.epa.gov/ncea/dermal.htm>.

USEPA, 1999. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual: (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Guidance, OSWER Directive 9285.7-10. Please contact Region II risk assessors to discuss any potential updates to the factors in this guidance.

Toxicity and Chemical Specific Guidance

USEPA, current version. Integrated Risk Information System (IRIS); On-line Service. Available at: www.epa.gov/iris.

USEPA, 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/R-93/C89. July 1993.

USEPA, 1996. PCBs: Cancer dose-response assessment and application to environmental mixtures. EPA/600/P-96/001A. Available at: <http://www.epa.gov/ncea/pcbs.html>.

USEPA, 1997. Health Effects Assessment Summary Tables (HEAST), FY '97 Update. U. S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA/540-F-97-036. July 1997.

USEPA, 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. EPA-600-R-02-013.

USEPA, 2007. Framework for Metals Risk Assessment. EPA/120R-07/001. www.epa.gov/osa.

Risk Characterization Guidance

USEPA 1995. Memorandum from Carole Browner on Risk Characterization, U.S. EPA, February 22, 1995. Available at: <http://www.epa.gov/ordntrnt/ORD/spc/2riskchr.html>.

USEPA, 1995. EPA Risk Characterization Program. Memo from Administrator Carol Browner dated March 21, 1995. Available at: <http://www.epa.gov/ordntrnt/ORD/spc/2riskchr.html>.

Risk Assessment Guidelines and Policies

USEPA, 1986. Risk Assessment Guidelines for Mutagenicity Risk Assessment. 51 Federal Register 34006, September 24, 1986.

USEPA, 1986. Risk Assessment Guidelines for Chemical Mixtures 51 Federal Register 34014, September 24, 1986.

USEPA, 1992. Risk Assessment Guidelines for Exposure Assessment. Federal Register. Available at: <http://www.epa.gov/nceawww1/exposure.htm>

USEPA, 1995. Neurotoxicity Cancer Guidelines. Federal Register. 60 FR 52-32-52056, October 4, 1995.

USEPA, 1996. Proposed Guidelines for Carcinogen Risk Assessment. EPA/600/P-92/003C. Available from: <http://www.epa.gov/ORD/WebPubs/carcinogen/>.

USEPA, 1996. Guidelines for Reproductive Toxicity Risk Assessment. EPA/630/R-96/009, September 1996. Available at: <http://www.epa.gov/ORD/WebPubs/repro/>.

USEPA, 1996. Proposed Guidelines for Carcinogen Risk Assessment. EPA/600/P-92/003C, April 1996. Available at: <http://www.epa.gov/ORD/WebPubs/carcinogen>.

Data Useability and Quality

USEPA, 1992. Final Guidance on Data Useability in Risk Assessment (Part A), OSWER Directive 9285.7-09A., June 1992. Available at: www.epa.gov/programs/risk/datause/parta.htm.

USEPA, 1992. Guidance for Data Useability in Risk Assessment (Part B), OSWER Directive 9285.7-09B, August 1992. Available at: www.epa.gov/programs/risk/datause/partb.html.

USEPA, 1993. Data Quality Objectives Process for Superfund, Interim Final Guidance. OSWER Publication 93559-01, EPA 540-R-93-071.

Air

USEPA, 1989. Air/Superfund national Technical Guidance Study Services, Volumes I-IV, EPA 450/1-89/001, 002, 003, 004, July 1989.

Surface Water and Sediment

USEPA, 1975. Tidal Flats in Estuarine Water-Quality Analysis. Ecological Research Series. EPA-660/3-75-025.

USEPA, 1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water – Part 1 (Revised – 1985). EPA/600/6-85/002a, September 1985. 609 p.

USEPA, 1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water – Part 2 (Revised – 1985). EPA/600/6-85/002b. 444p.

USEPA, 2000. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates – Second Edition.

USEPA, 2002. Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA-823-F01-023. 208p.

USEPA, 2005. Contaminated Sediment Remediation Guidance for Hazardous Waste Sites. EPA-540-R-05-012, OSWER 9355.0-85. And References Therein.

USEPA, 2005. Watershed Assessment of River Stability & Sediment Supply (WARSSS). Version 1. www.epa.gov/warsss/about.htm

Soil

USEPA, 1993. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive #9355.4-12.

USEPA, 1996. Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soils. Available at: <http://www.epa.gov/superfund/programs/lead/prods.htm>.

USEPA, 1996. Soil Screening Guidance, Fact Sheet. EPA 540/F-95/041. Available at: www.epa.gov/superfund/resources/soil/index.htm#fact.

USEPA, 1996. Soil Screening Guidance: User's Guide. EPA Doc. # 540/R-96/018, July 1996. Available at: www.epa.gov/superfund/resources/soil/

USEPA, 1996. Final Soil Screening Guidance, and Associated Appendices. May 17, 1996. Soil Screening Guidance User's Guide, EPA 540/R-96/018. Available at: www.epa.gov/superfund/resources/soil/

USEPA, 1996. Soil Screening Guidance: Technical Background Document (TBD). EPA Document Number: EPA/540/R-95/128, July 1996. Available at: www.epa.gov/superfund/resources/soil/.

Lead

USEPA, 1994. Technical Support Document for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (December 1994) [NTIS #PB94-963505, OSWER #9285.7-22]. Software available at: <http://www.epa.gov/superfund/programs/lead/prods.html>.

USEPA, 1994. Validation Strategy for The Integrated Exposure Uptake Biokinetic Model for Lead in Children (December 1994). Available at: <http://www.epa.gov/superfund/programs/lead/prods.htm>.

USEPA, 1994. Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (February 1994) [NTIS #PB93-963510, OSWER #9285.7-15-1]. Available at: <http://www.epa.gov/superfund/programs/lead/prods.htm>.

USEPA, 1998. Proposed TSCA §403 Soil Lead Hazard and OSWER's Lead-in-Soils Policy. EPA 540-F-98-061, OSWER 9200.4-29, PB 99-963211. Memorandum from Lynn Goldman and Tim Fields to Regional Administrators. Available at: <http://www.epa.gov/superfund/programs/lead/prods.htm>

USEPA, 1998. Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive 9200.4-27, EPA/540/F-98/030 PB98-963244, OSWER Directive # 9200.4-27P. Memorandum from: Tim Fields to Regional Administrators. Available at: <http://www.epa.gov/superfund/programs/lead/prods.htm>.

Risk Management

USEPA, 1992. National Oil and Hazardous Substances Pollution Contingency Plan (The NCP). OERR, OSWER Publication 9200.2-14, January 1992. USEPA, 1993. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, OSWER Directive 9355.0-30.

USEPA, 1993. Guidance for Conducting Non-Time Critical Removal Actions Under CERCLA. OSWER 540-R-93-057, August, 1993.

USEPA, 1996. Revised policy on performance of risk assessments during RI/FS conducted by Potentially Responsible Parties. OSWER Directive No. 9340.1-02.

Monte Carlo Analysis

USEPA, 1997. Policy For Use Of Probabilistic Analysis In Risk Assessment at the U.S. Environmental Protection Agency. Guiding Principles for Monte Carlo Analysis - (EPA Document No. EPA/630/R-97/001, March 1997). Available at: <http://www.epa.gov/ORD/spc/probpol.html>.

USEPA, 1997. Guiding Principles for Monte Carlo Analysis. EPA/630/R-97/001, March 1997. Available at: <http://www.epa.gov/ncea/monteabs.html>.

Children's Health Issues

USEPA, 1995. New Policy on Evaluating Health Risks to Children. From Administrator Carol Browner to: Assistant Administrators, General Counsel, Inspector General, Associate Administrators and Regional Administrators. October 20, 1995. Available at: <http://www.epa.gov/ORD/spc/memo1020.html>

USEPA, 1995. Policy on Policy on Evaluating Health Risks to Children. Available at: <http://www.epa.gov/ORD/spc/memohlth.html>.

Additional Guidance:

USEPA, 1997. Special Report on Environmental Endocrine Disruption: An Effects Assessment and Analysis. EPA/630/R-96/012. February, 1997. <http://www.epa.gov/ORD/WebPubs/endocrine/>.

USEPA, 1997. Cumulative Risk Assessment Guidance-Phase I Planning and Scoping. Memorandum to: Assistant Administrators, General Counsel, Inspector General, Associate Administrators, Regional Administrators and Staff Office Directors, dated July 3, 1997. Available at: <http://www.epa.gov/ORD/spc/cumulrsk.html>.

USEPA, 1997. Guidance on Cumulative Risk Assessment. Part 1. Planning and Scoping. U.S. Environmental Protection Agency, Science Policy Council, July 3, 1997. Available at: www.epa.gov/ORD/spc/cumrisk2.html.

Chemical Specific Documents of Interest

Chemical specific documents for mercury, arsenic, lead, and PCBs and other contaminants are available at: www.epa.gov/nceawww1/healthri.html.

EPA homepage for human health risk assessment documents: <http://www.epa.gov/superfund/programs/risk/toolthh.htm#GG>.

